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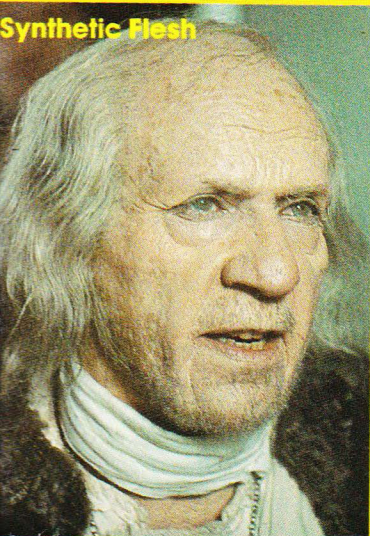
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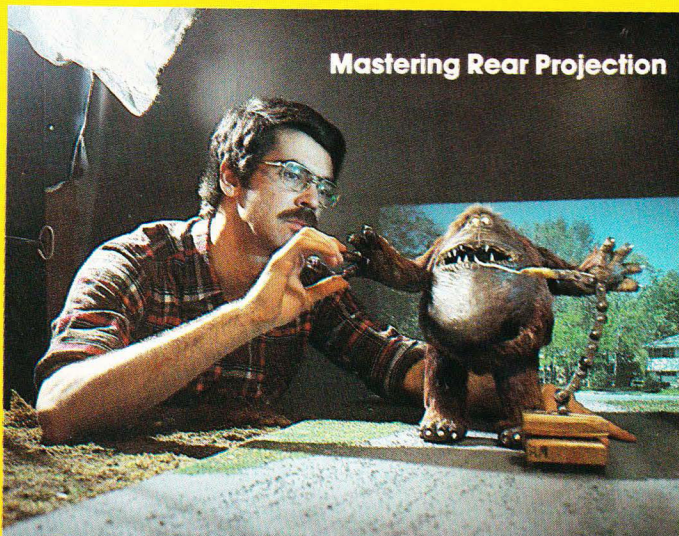
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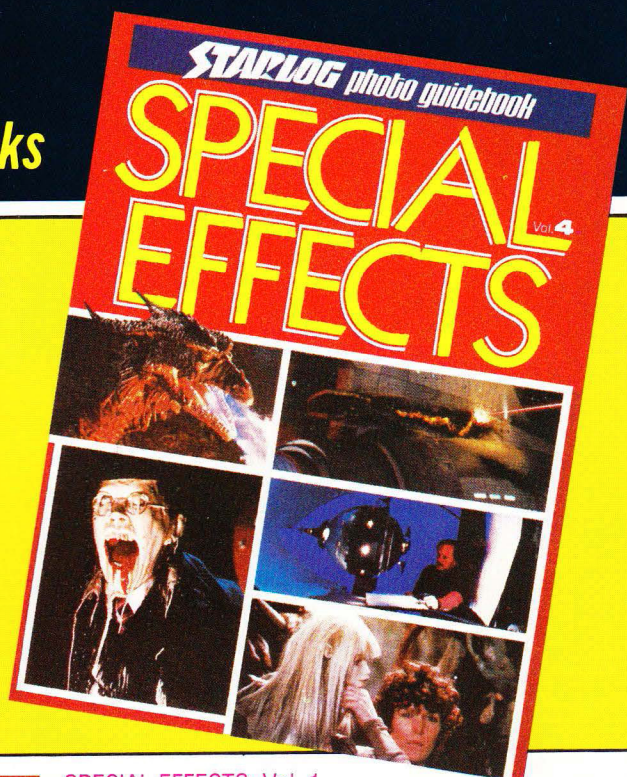
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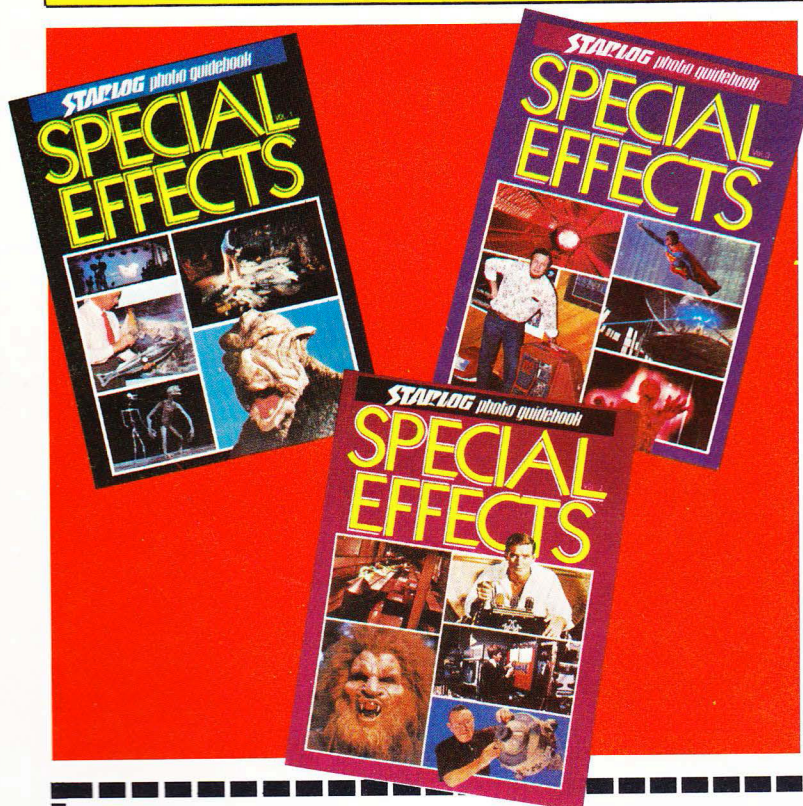
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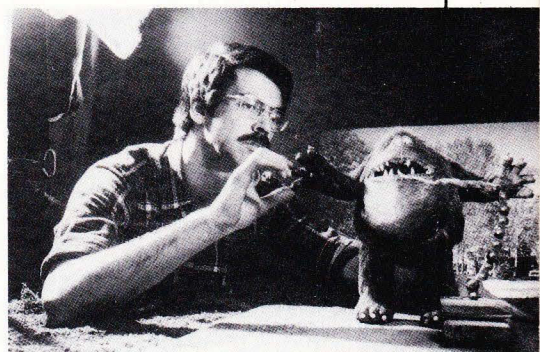
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About the cover: (Clockwise from top) Charlton Heston as Moses parts the Red Sea in a spectacular special-effects sequence from Cecil B. DeMille's *The Ten Commandments*. Photo ©1956 Paramount. See page 43; An optical shot from Mark Chorvinsky's *Strange Tangents*. Photo courtesy Chorvinsky Studios. See page 18; John Dods animates his "Grog" character in front of a rear-projection set-up. Photo courtesy John Dods. See page 63; Actor F. Murray Abraham in synthetic-flesh makeup for his Academy Award winning role as Antonio Salieri in *Amadeus*. Photo ©1984 Orion. See page 25.



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Editor's

BENCH

The Special Effects Spectacular

For many people, highly theatrical, super spectacular epic films such as *Ben Hur*, *Around the World in 80 Days* or *Cleopatra* symbolize Hollywood filmmaking at its worst. They are often stultifyingly stagey, filled with stilted ecclesiastical dialog and shallow in every respect save for their blatant showiness. *But*, epic films have been with us since the earliest days of filmmaking as one producer after another strove to be the biggest and best P.T. Barnum of the silver screen. D.W. Griffith, whose own *Birth of Nation* is still treasured and revered today is reputed to have coined a phrase for these mighty productions: he called them Super-Colossal.

What makes a motion picture epic? Is it simply a measure size—the biggest cast, the biggest sets, the biggest screen and so on? It's true that a good deal of the appeal in an epic is the Awe Factor. These factors are usually listed on giant billboards. See vast armies locked in mortal combat. See the pleasure domes of the evil emperors. See the titanic arena of the slave masters. And so on.

To be truly successful and really worthy of the billing Super-Colossal, an epic needs to offer more than just a bus tour of monuments and castles. It must portray *human* events on a titanic scale as well. D.W. Griffith's two greatest epics, *Birth of a Nation* and *Intolerance*, offer portraits of human struggle on a grand scale.

The filmmaker who best exemplifies the qualities of super showmanship and epic filmmaking is the late Cecil B. DeMille. For over 30 years his name was synonymous with spectacle. His film, *The Ten Commandments*, released in 1956—a remake of his own early silent version made in the 1920s—has played regularly on network television and is still revived for general release in motion picture houses nearly 30 years after its first premiere.

Some months ago, Paul Mandell suggested that CINEMAGIC run an article on the special effects in *The Ten Commandments*. The film won an Oscar for best effects, beating out MGM's *Forbidden Planet*. Small wonder! *Ten Commandments* is epic storytelling at its most vivid. DeMille tells the story of the life of Moses from a babe in bullrushes right through the climactic exodus from Egypt. For once, the movie posters were not exaggerating. The parting of the Red Sea is "the single most spectacular sequence ever filmed." John Fulton and his team of effects artists used every trick in the book and invented a few more to bring Bible legend to screen life.

Volumes could be written detailing the years of struggle, trial and error that were necessary to create the effects for the film. Unfortunately, Paramount's studio policy at the time was to keep special effects "Top Secret." Paramount execs believed that if the public knew how the effects sequences were created, enjoyment of the movie would somehow be spoiled. Nonsense! Publicity departments traditionally make no secret of the fact that films are made on sets with actors wearing costumes. They graphically detail quantities of cement, lumber and fabric. They interview actors, who discuss their character portrayals. They interview directors and designers who discuss story concept and set design well before the release of a motion picture. In fact, this information is used to publicize the picture. Does knowing all this "spoil" the movie for audiences? Certainly not. If anything, it *increases* their enjoyment, if only because they know they are getting their money's worth. They *know* what colossal efforts were undertaken by the producers for their enjoyment. It *enhances* their appreciation of a picture.

The same should be true for special effects. And, in this post *Star Wars* era, it largely is true. But for those artists and unsung special effects heroes of the past, it is too late. Most are long gone. Many of the details of their work have been forever lost. In this issue, writer/filmmaker Paul Mandell has spent many years tracking down what shreds of history still remain of the unique challenges that faced the special effects artists on *The Ten Commandments*. It is to these master effects craftsman of the past upon whose work so much of today's filmmaking depends that we dedicate this article, "Behold... His Mighty Hand."

—David Hutchison

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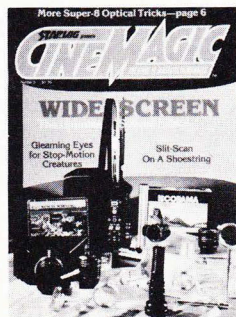
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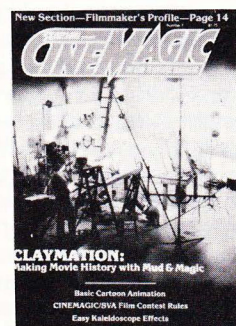
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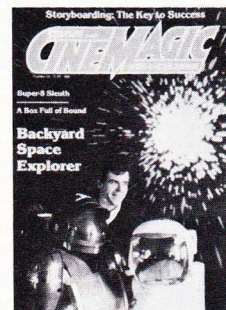
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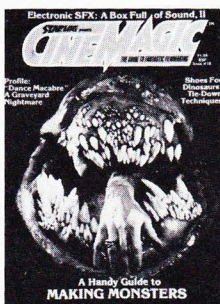
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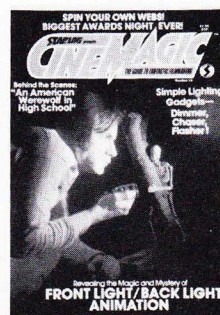
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CAREERS

“Mr. Poppin’ Fresh”

From the Puppertoons to The Giant Behemoth to the Pillsbury Doughboy, the creator of television’s most unique commercials describes how it all came to be.

By PAUL MANDELL



The beginning of the Pillsbury Doughboy, Kellison with the first armature in 1963. Notice, no knees.

Phil Kellison is a name not generally known outside the Hollywood effects arena, but the work he has done and supervised for over three decades has been etched into the consciousness of millions. The man is a walking history book of trick television commercials. “Several years ago,” he says, “I tried to total up the number I’ve worked on. It went over 5000.”

Kellison has been the foremost proponent of stop-motion on the picture tube, having shepherded that process during a

golden age of marching cigarettes, dancing ketchup bottles, and figurines speedily combating upset stomach. He has worked as an animator for George Pal and a miniature maker for Willis O’Brien. During his ten-year reign over the effects stage at Cascade Pictures, he and his associates developed the Pillsbury Doughboy, Mrs. Butterworth, Hans the Nestles Man, and countless other animated trolls and curmudgeons. Among the alumni of “Cascade University” who worked under Kellison’s guidance are Jim Danforth,

Dennis Muren, David Allen, Rick Baker, Jon Berg, Harry Walton, Laine Liska, and others too numerous to mention. “We all owe a lot to Phil,” says ILM director Dennis Muren with veneration. “He laid out an environment blueprint for setups and problem solving that proved invaluable as each new project evolved.”

An amiable man with a Keenan Wynn mustache and a Cheshire cat smile, Kellison is currently the creative director at Coast Special Effects, his own operation in North Hollywood catering to the needs of commercials, TV movies, and occasional features like *Airplane II*. Doughboy replacement figures line his showcase, Speedy AlkaSeltzer winks from its pedestal, a six-foot replica of *The Mayflower* sits in the reception room, and a framed cartoon of exasperated technicians bears the caption, “They wanna know if we can shoot the explosion in stop-motion.” To that, Kellison remarks: “I could do most anything with movie magic, but you can’t control the laws of physics. Clients come in and think we can! Generally, this involves some demo of a product that won’t behave the way you want it to, must defy gravity, and is almost impossible to make. But they *expect* this of you. Those are the hardest things.”

Phil Kellison grew up in the quiet country of upstate New York. “Because I could draw, my parents thought I should go to art school. So, I attended Pratt Institute in Brooklyn, training to be an ad designer.” An early stint on Madison Avenue was interrupted when the Army drafted him.

“This was just prior to World War II. They were making training materials for the Army, and I was put in the art department, in Ordinance. We did books, maps, charts and drawings for training personnel at the Aberdeen Proving Grounds in Maryland. The department got so big, they decided to split it in two. Half of us were sent to California to open a new section at Santa Anita Race Track, which had been the relocation center for the Japanese. I was stationed there.

“Although I was now in the model shop, I was always interested in film. The Army wanted special films for the Ordinance and didn’t want the Signal Corps to do it. Because I had a movie camera, I was



Miles Pike (left) and Kellison animating at George Pal's Puppetoon Studio, circa 1946.

PHOTOS: COURTESY OF PHIL KELLISON

assigned to do them. These were 'clarification' films, 16mm in color, explaining what the *training* films were about. So, from that point on, I would bring my film into Hollywood for developing at Eastman Kodak."

Stop-frame Fever

One evening, Kellison went to the base movie theater and saw, for the first time, a George Pal Puppetoon. "I was absolutely entranced by it. I knew stop-motion from our training films, in that you move something or bend an object. In those days, we found things more by experimentation, because there wasn't the fund of information that exists today. Trick work was kept secret, and there *were* no magazine articles. At least none that were clear and accurate. But with dimensional animation, the bug had bitten me.

"I remember the first Puppetoon I saw: 'Western Days.' In it was a little wooden horse. Pal had designed things to look like wood turnings. When its lifted foreleg went into a bend, which no piece of wood can do, *this* is what entranced me. It looked so unusual. I knew nothing about replacement animation."

During one of his Hollywood Kodak

runs, Kellison was delighted to discover that the very studio producing those Puppetoons was located on the next block! Kellison gingerly opened the Spanish-style door in front of Pal's shop on McCadden Place and introduced himself. That door still stands. Two buildings behind it were warehouses, which Pal had converted into stages.

"If you wore a uniform during the war, it was almost an 'Open Sesame' to the movies. The studios were sensitive to being a non-essential industry, and they were being extremely patriotic. So, I got to visit George's place. I visited so often, I practically became a fixture there.

"Mingling with the animators was a heady experience," Kellison beams. "There was Felix Zelinka. Herb Johnson, whom I later worked with. I think Wah Chang was there; Gene Warren wasn't during the war. Herb Price, the world's fastest animator.' And George, of course. This was around 1943."

When the camp at Santa Anita disbanded, Phil Kellison was shipped overseas and supported the Chinese army during the Battle of Burma. "When I returned to the States, I discovered that you could actually live through the winter without

snow if you didn't live in upstate New York! So, I moved to California. All the wartime industries had shut down and there was a shortage of jobs. I went in to see George Pal, to ask if he would put me on. I loved his studio so much, I thought I would be in seventh heaven there. And I think, because George had seen me so often during the war, he thought I had *worked* there. And he was probably doing no more than giving me what he thought was my old job back! He put me on, and that was my first job in Hollywood."

Kellison started animating with Pal late in 1945 at \$45 a week. Willis O'Brien, Ray Harryhausen and Wah Chang had left. Gene Warren was on when he arrived. Both spent a year and a half at the studio.

"I worked on a lot of *Jaspers*. Creating a figure for a puppetoon was very time consuming. So, what he tried to do was have a set of standard characters, to make Puppetoons with little effort. he could only do six a year. So, out of the six, he would do three *Jasper and the Scarecrows* which were standard, and three different ones so there would be a bit of a change.

"George's concept was to create these puppets mostly by replacement and for very simple movements, so he could hire



Wah Chang (left) and Kellison working on a stop-motion Kellogg's commercial at Kellison's studio in 1956.

any idiot to do it," Kellison mused with great fondness. "The body divided at the waist. The legs were replaced for dozens of different walks. The arms were lead-filled rubber, hand-animated. The replacement heads had all kinds of facial expressions and mouth actions, but they all had different sets of eyes which could be moved with a pin. All these things were written out on the most peculiar exposure sheets which Pal had devised in Europe. They were not laid out like those for flat-bed animation, where you put down numbers of cels. He had boxes in a row and would draw pictures of an arm swinging, frame by frame, or reaching. And he would draw how the eyes moved—up, to the right, to the left or down.

"The eyes were what we hated the most. They were balls about 5/32 of an inch in diameter. To blink them, you took some flesh color and painted on the eyelid as it went down, and washed it off with a Q-tip to open them again! And he had the puppets blinking all the time. But to Pal's credit, every frame was *perfection*. The figures had airbrushed cheeks and the hairline was painted. You would look at the closeups on a 40-foot screen at the Paramount Theater in New York and never realize that each frame used a different head. Only the mouth moved at

times; the registration of each head was that perfect.

"Most of the puppets were created by the time I had arrived. This was toward the end of his operation, and the work that went into the newer puppets had not been as precise and time-consuming as before. Wilbur the Lion was more like a sculpted lion than a turned figure. But the early ones were gorgeous. They had that wonderful European style. Later, he began to add more realism. *John Henry* was one I worked on. I remember Gene Warren objecting to George's policy of not letting us do more articulated hand animation."

Kellison left Pal's studio in 1947 to seek other work, about the time that it was closing down for Pal's production of *Destination Moon*. Originally, Pal had intended to keep the shop open and do the film's effects there. But as the picture developed under Paramount's control, the work was done at Paramount and on the general service lot. "George's concept was to do the effects using his own technique," Kellison discloses. "But as the film demanded more realism, his technique was not satisfactory. The stop-motion man on the rocketship in *Destination Moon* was done early in the picture. Unfortunately, it looks like what it is. And I think as a result of those shots, it was realized

that that sort of thing was not the answer.

"It was heartbreaking when Pal closed the studio. So many wonderful mementos of his Puppetoons were around. He never threw anything away. If Pal had to build a grand piano for a picture, and it only required the camera side, he would build all four sides. He did that constantly, figuring that it would be used again."

After leaving Pal's studio, Kellison joined a stop-motion company that specialized in educational films. The outfit shared space with UPA. Here in 1947, he did his first TV commercial—an odd-ball job if there ever was one.

"This was the start of it all. Somehow in Los Angeles, an ad agency found out about a commercial running locally on KTLA about a charter fishing boat. All they did was put up a card with a picture on it and said 'Call this number.' It ran *one time* on the station and the guy had his boat sold out for the season! The agency was so impressed, they said, 'Well, why not make a commercial for our client, Boysen paint?' There were no expensive commercials run locally. So, they got their client to agree to have a puppet film made about Boysen paint.

"I did the thing—a bunch of anthropomorphic miniature paint cans doing a barn dance. Paint can bodies, paint brush

arms. The pitch was a song that some guy wrote and sang with a guitar. We did it in 16mm because we couldn't afford 35mm. And we shot it in color, because we figured that anyone who is going to spend 'this much money' on a commercial will run it until color television becomes a reality. It was one minute and twenty seconds long—no one put any limit on length, and this is how long his *song* ran! The songwriter didn't realize he was violating ASCAP to record for the commercial because it was local, which somehow broke the rules.

"When it went on the air, all five of us had to go to the corner of Cahuenga and Sunset and look at it in a store window which sold TV sets. Not only did none of us *own* a set," Kellison laughs, "We didn't even *know* anyone who owned a set! This very expensive commercial cost us \$800 to make, and the agency paid us \$600. We took the loss. It was really the birth of television commercials. I still have a print of it, and it's not that bad."

New Beginnings in New York

The film business fell into a slump in 1950, partly due to the rapid growth of television across America. Independent filmmaking in Hollywood was drying up; even educational films suffered. Kellison went back to New York City and considered returning to art. But he really wanted to be a cameraman.

"Commercials in New York were just becoming big business. Michael Myerberg's company was doing a lot of them. I tried to get on Myerberg's *Hansel & Gretel*, but he preferred ballet dancers as animators. [See "Animation Epic" in CINEMAGIC #28.]

"Now in the early commercials, stop-motion was *very* popular. If a product could float in mid-air and wrap itself up—boy, that was class! The most famous ones were the dancing cigarettes for Lucky Strike done by Bob Janess, a Pal animator who preceded me to New York in the late forties. Janess worked for a company called Sara, but he had begun ailing and soon dropped out of the picture. Ray Harryhausen, incidentally, had done a sample reel of marching cigarettes before the commercial came out, but was unsuccessful in trying to prove that it had been made as a result of his film."

When he hit New York, Kellison had a list of names of people in the film business he didn't even know.

"Lo and behold, everyone I called wanted me to work for them! I was a 'Hollywood cameraman', even though I was at the bottom of the barrel. And I could do stop motion and tricks."

Kellison approached a company called Film Graphics (later TV Graphics), one of the big commercial houses in Manhattan, and spoke to a man named Bernie Rubin. "He was a very strange and funny man who did one of the first 3D color films for the 1939 New York World's Fair, of a car

assembling itself in stop motion. At the time, stop motion was known strictly as 'three dimensional animation' to distinguish it from drawn animation. On the phone, Bernie asked me, 'What do you do?' I said I was a three-dimensional cameraman. And he said 'You *are*? Our cameramen are only two-dimensional.' He had that sense of humor and was a wonderful teacher. Bernie introduced me to optical printing, which was very valuable. In fact, he taught me more things than I've ever learned from anyone else.

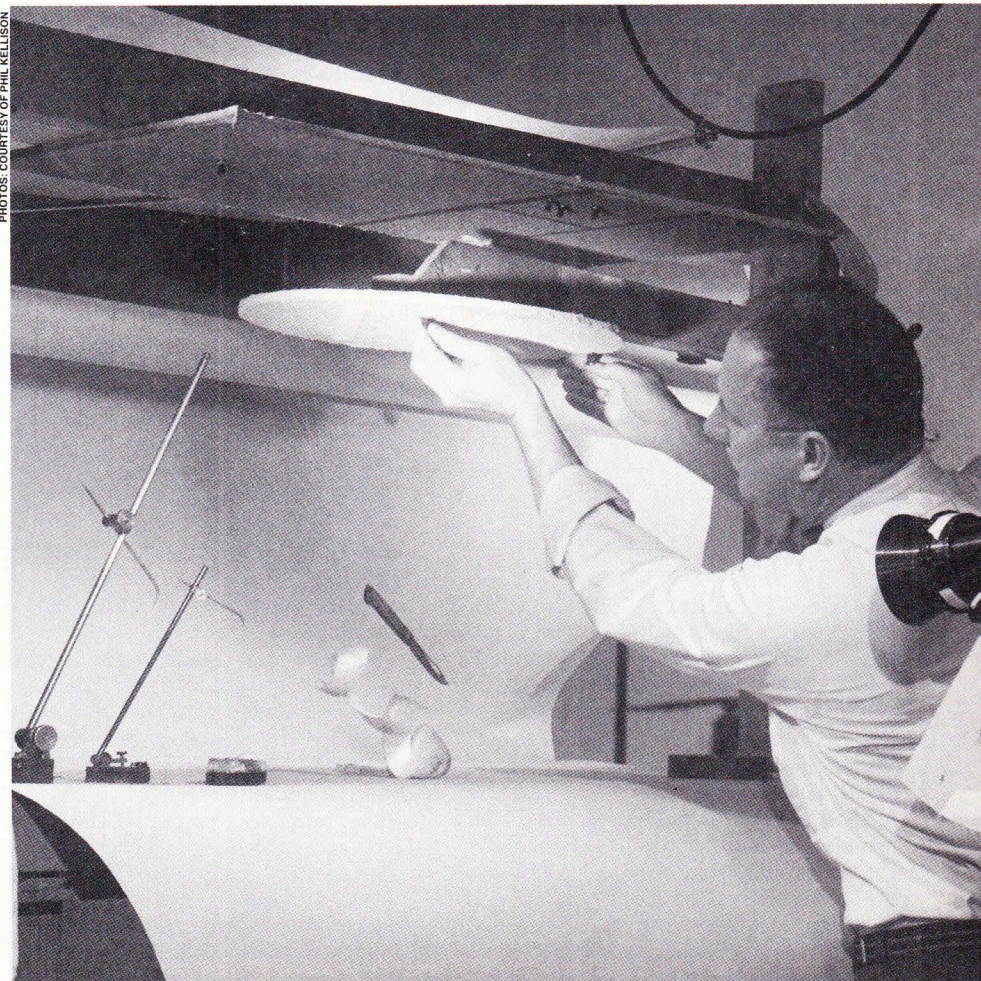
"His primary customer at that time was Milton Biow, whose client was Phillip Morris cigarettes. That was when Phillip Morris sponsored *I Love Lucy*. Now, many commercials were being done in Los Angeles at Hal Roach: they were just beginning to open their doors to them. The agencies *loved* to come to Hollywood. But for some reason or other, almost all of the effects that were done in Hollywood were done *over* by us in New York. Perhaps it had something to do with the bi-coastal cost. Agencies are notorious for changing their mind after the fact."

Phil Kellison spent four years at Film Graphics creating the effects slugs for *I Love Lucy*. Cigarette packs assembled themselves and cigarettes rolled them-

selves up, while logo caricatures of Lucille Ball were animated on cels. (Years later, Jim Danforth would animate a Lucy puppet at Cascade—one of the smoothest stop-motion jobs ever—and very "fifties" in appearance.)

While New York was booming, the Swift-Chaplin group organized in Los Angeles—the birthplace of Speedy Alka-Seltzer and Green Giant. The company started out as the remnants of George Pal's studio. Miles Pike was the head animator who for years brought Speedy to life; John Abbott was the cameraman; Tom Corlett started there as a model-maker; he presently works with Kellison at Coast.

"A number of other people from Pal formed an outfit called Pathways," Kellison recalls. "They went into the stop-motion commercial business and finally got a nibble on this Speedy character. Pathways did a pilot for it but never received any feedback. Around that time, Charles Chaplin, a businessman, and Howard Swift, an animation director from Disney, formed their own group to do flat-bed animation for commercials and were chugging along fairly well. Soon, the two companies merged—Pathways was going broke and Swift-Chaplin wanted to tap the stop-motion market. After they joined



Kellison at Cascade Studios in 1962 peeling a real potato in stop motion—"a real toughy". Note the aerial brace that was devised to "fly" the knife and potatoe skin.



Ripple commercial done in replacement animation. The Ripple bottle bends, squashes, stretches and takes on various impossible shapes—the ultimate anthropomorphism.

forces, Alka-Seltzer became alive again. Pathways had also been doing stop-motion commercials for Green Giant, but after the merger, their function was to provide dimensional backgrounds for the animated puppets. Those two products kept Swift-Chaplin rich for years."

Return to Tinseltown

Eventually, Kellison's enchantment with Gotham began to wane. "I had a real love affair with the city when I was in art school," he admits. "Gordon Jenkins's *Manhattan Towers*, that was me in New York! But after having worked in Hollywood, it wasn't the same. Or I wasn't the same. I couldn't tolerate the weather anymore and tried to leave. Then, I met a girl and didn't *want* to leave. Finally, we were married and left for California in 1954." On the way, he stopped in Chicago to see Herb Johnson, another Pal alumnus, who had taken Bob Janess's place at Sara. Johnson put Kellison to work on a job making *real* horsemeat steaks fly through the air for a dogfood commercial. "It was all done stop-motion on multiplane levels of glass! One of the messiest jobs I've ever done."

Los Angeles was no mecca for stop-motion animators in 1954, and Kellison foundered. Out of the cold he called the Disney studio, told them of his background in effects and modelmaking, and was introduced to Norm Ferguson, the man in charge of Disney's animators.

"He interviewed me and decided to put me on as a modelmaker for something called Disneyland. But by the time I got

processed and was on the lot, all the model work had been completed! They didn't know what to do with me. Since I had been a cameraman, I found myself in the animation camera department. That puzzled everybody—no one came to the camera department through Norm Ferguson. He supplied the *talent*. Uneasily, they would ask, 'Would you *mind* running the test camera?' It was a real mill, though. I was fortunate to have a job, but I really didn't care for it."

At that time, animator John Hubley was forming his own company to do *Finian's Rainbow* as a cartoon feature film. An entire soundtrack was recorded with Frank Sinatra, Ella Fitzgerald and the Oscar Peterson Trio. The color layouts were dazzling. But the film was never made. "John had run out of money doing this feature and discovered the people wanted him to do animated commercials. He found them so lucrative, he started a new outfit called Storyboards. I was called in as a production manager and stayed on for a few years. He had to give up on *Finian* because the commercials became successful."

"Then, Hubley decided to go into fine arts and closed his commercial house. I and thirty people were out of a job. The few who remained formed a company called Quartet, which became a long-running cartoon facility."

Serendipitously, an animation cameraman at UPA named Max Morgan had leased an optical printer, only to discover that he didn't know how to run it. Kellison did. "We went into partnership. Max had an on-going camera service. I would run the

printer, doing whatever opticals were required to merge animation with live action commercials. We were doing OK. Then along came the recession of 1958, and we couldn't keep up the payments to run the equipment. Eventually, we received the money that was outstanding to us, but it didn't come in time to save the company."

Scorpions and Behemoths

Freelancing in Hollywood, Kellison worked for Howard Anderson as an optical technician. The monster films of the fifties were in their hey-day, and *The Black Scorpion*—one of three films on which Willis O'Brien and Pete Peterson collaborated—was turned over to Anderson's facility for optical doctoring.

"Peterson did one long move following these creatures under a bridge," Phil recalled. "However, he was using a rack-over Mitchell—reflexes were unavailable in those days—and his calibrations drifted a bit off. The scorpions all went off to one side of the frame. One of the things I had to do was optically blow the scene up, making it big enough so I could do an 'optical tracking' frame-by-frame on the printer. In doing this, I really began to appreciate the complexity of the animation and the camera moves."

Phil Kellison and his old friend Wah Chang contracted directly to do the volcano effects for *The Black Scorpion*. Though Howard Anderson did most of the opticals, the volcano shots were done on Kellison's printer.

The Giant Behemoth followed, a hastily-written film reprising *The Lost World's* brontosaurus attack on London (here, a paleosaurus), with live action directed by Eugene Lourie, who five years earlier had done *The Beast From 20,000 Fathoms*. The producer of this film contracted the effects work to Jack Rabin, who in turn sub-contracted the stop-motion shots to O'Brien and Peterson.

At the time, Kellison was working for Rabin's Studio Film Service as an insert cameraman. The service, founded in 1946 on a lot which had once been Eagle-Lion Pictures, provided shoestring special effects for cheap (but interesting) sci-fi films (*Kronos*, *Invasion USA*, *Flight to Mars*) and titles for TV shows (*Superman*, *My Little Margie*, *Seahunt*) in association with artists Louis DeWitt and Irving Block. "Jack did all the opticals, main titles, and crawl titles of the ZIV shows for as little as \$175 a show. He adhered to the idea that you can lose money on every show and make it up in volume."

It was on the set of *Mighty Joe Young* that Phil Kellison first met Willis O'Brien, and was very much in awe of him. "OBie wasn't animating anymore when *Behemoth* evolved. Out in Encino, he and Peterson had a concrete building which, after I had gotten into this project, I suddenly discovered was about two blocks from where I lived! OBie needed some miniatures made. I volunteered to do

them freelance."

The miniatures included the dockside cranes, the ferryboat and the barges that lined the horizon of Rabin's studio tank. The cranes were breakaways made of copper which the Behemoth crushed when it rose onto the dock.

"I put my heart and soul into them. They were *working* cranes, yet they were set up so they could be animated and collapse. I took them over to OBie and asked him if they were good enough. He looked at them and said, 'They're too *goddamned* good.' I wasn't sure if that was a compliment or not, but I suppose it was!

"I remember being there for the first animation shot of the creature walking onto the dock. It was such a *long* walk from the end of the setup to the camera lens. They couldn't follow focus on the model because the background would go out of focus. OBie was using a 20mm lens. When I asked what f-stop they were using, OBie said, 'Well, I don't know!' What they had done was pull the pin on the leaf of the aperture in order to stop down further than the lens was intended to go! Essentially, they were working with a pinhole camera. OBie said, 'We don't know what stop it is. We just make a test until it's right, and that's what we light it to.' That's how they operated; it was all trial and error."

Rabin's water tank was small—the entire setup from camera lens to the rear was less than 20 feet. For scenes of the Behemoth rearing up in the Thames and overturning the ferry, Kellison photographed his own miniature.

"The boat was about 30-inches long, which I built from existing photographs. There were no blueprints. There were many vehicles on the upper deck; some were very distinctive. We even had a lumber lorry. We were extremely fortunate to have been able to find English

Dinky Toys which precisely matched the vehicles on the real boat filmed in London. Because we could get those vehicles, and because of the size of the tank, the size of the ferryboat was dictated by the size of the *toys*! I also built paddles for it that actually worked, although nowhere in the film do you actually see them."

To further illustrate the tight budget, Kellison shot a scene of the miniature cars dropping into the water as a test, to prove to Jack Rabin just how *bad* would look. Producer Dave Diamond and Rabin looked at it, then cut it into the film!

The mechanical prop of the Behemoth's head and neck was a joint effort between Phil Kellison and Willis O'Brien using a framework of plexiglass rods and discs to shape out the neck. At first, O'Brien suggested using wood, but Kellison thought that the joints would swell once submerged. The eccentric miniature was similar to the mechanical brontosaurus in *King Kong*. The base of the neck was fixed to a board, and control cables were worked by three levers. One arched the neck, a second one raised or lowered the head, and a third worked the jaw. When the frame was completed, OBie took it back to Peterson's garage and covered it with latex skins which he had cast from a real iguana.

"It was gorgeous: Even the eyes worked. The script called for the monster to arch his head *under* the boat, turning it over. That was the intention. However, there was a very impetuous technician on the set. He got so excited working the levers that he broke them all! During rehearsal, it worked fine. But by the time we got to shoot, the neck would no longer arch and the mouth remained slack-jawed. We had rented lights, a high-speed camera, and a pump for the tank—it was 'shoot it today' or never.

"Finally, we had to use the Behemoth's head as a battering ram, and that's the way it appears in the picture."

Pete Peterson animated a beautiful night shot of the creature walking into high tension wires that fell on a gas tank, causing it to explode. The tank looked strange. As Kellison explained, "There was a real gas tank at the Goldwyn Studio across the street which I was going to build a model of and blow up. I figured it would take three or four days to make but they couldn't wait. Without my knowing it, matte painter Irving Block put a pile of sand on a table, stacked up a bunch of *film cans* and took a picture of it. Then he and Rabin doubled in an explosion over it! That's why the gas tank has such peculiar striations. It annoyed the hell out of me because I didn't get a chance to build the miniature, but I had to admire Blocky's *chutzpah* for doing something like that."

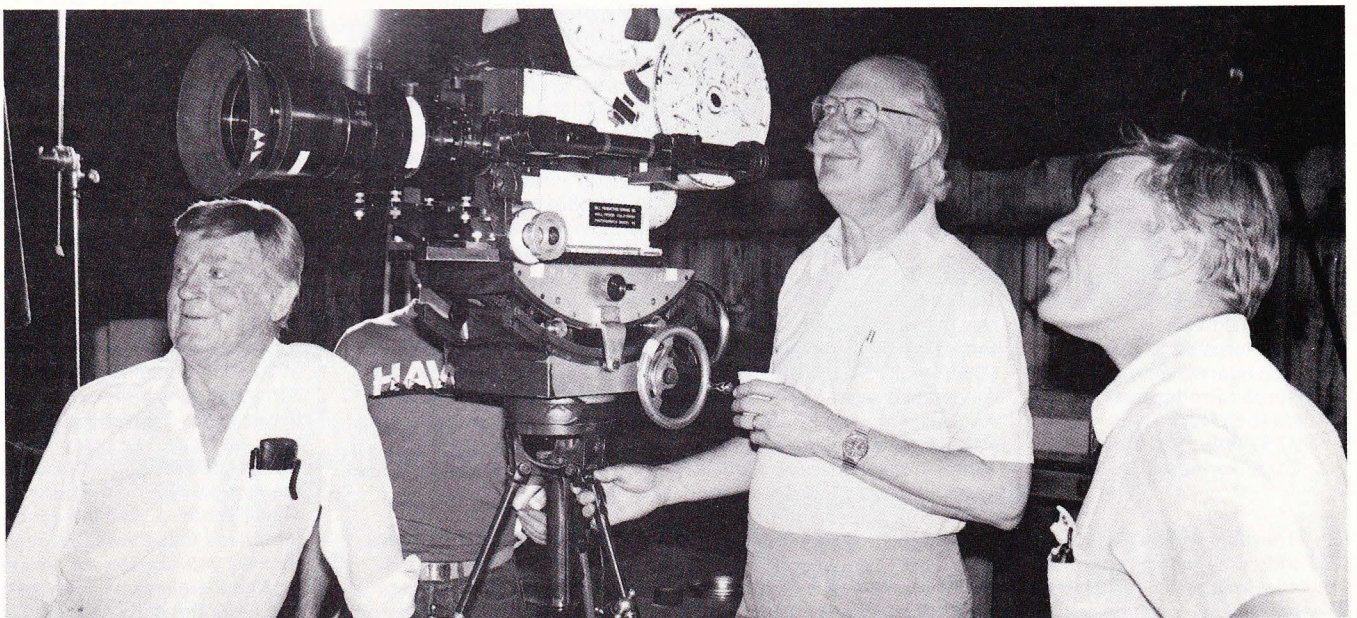
In 1959, Edward Small decided to make *Jack The Giant Killer*, a copycat production of *The 7th Voyage of Sinbad*. Phil Kellison operated second unit camera for fifteen days on an outdoor set erected on an Army barge off Catalina Island. Howard Anderson was in charge of the effects, and supplied Project Unlimited with the necessary footage for the stop-motion creature shots. "Gene Warren and Wah Chang built all the props and puppets," said Kellison. "I was in charge of the miniature shooting and rear projection setups. We had a group of animators including Don Sahlin, Tom Holland, and Dave Pal. Tom did the original test on one of the creatures. Jim Danforth came in and animated the most difficult scenes.

"*Jack The Giant Killer* was the last thing I did before I joined Cascade Pictures. That was the start of something of which I'm most proud."

CM

Next in CINEMAGIC: The Cascade years, the birth of the Pillsbury Doughboy, Phil Kellison's surprising attitudes on stop-motion today.

PHOTOS: COURTESY OF PHIL KELLISON



Left to right: Bob Ryder, Phil Kellison and Joe Rayner (at Coast Studios, 1983) look pleased after successfully blowing up a miniature of the Empire State Building for the feature *The Man Who Saw Tomorrow*.

Filmmakers' FORUM

A regular department devoted to readers' comments about filmmaking, their problems and solutions.

Soundtrack Composer

... When I watch a film, I believe one of the most powerful forces at work is the music. In it, one can feel action, suspense, romance, beauty, or just about any other feeling. One way or another, the composer knows how to get you there, and keep you locked in a world all his own. For the amateur filmmaker, hiring Jerry Goldsmith, John Williams, or James Horner to compose a custom score for us is not the answer. None of us can afford it!

In addition to filmmaking, I have had nine years music experience. Utilizing the Casiotone CT-501 E.M.I., interfaced with a Commodore 64 computer, also percussion, and piano, I will compose an original soundtrack for your film. Though some of this sounds like it would be weird electronic music, it's not! There are many different types, but I prefer to have a melodic theme to my music; something that doesn't sound like a bunch of notes all jumbled together like some sequencer out of sequence. If you are interested in a soundtrack for your film (horror, sci-fi, fantasy, adventure, space, romance, etc.) or would rather have a demonstration tape first, please contact me at the address below.

Andrew Petterson
Rt 8 Box 268
Tucson, AZ. 85730

Florida Filmmaker

... I am 16 and would like to get in contact with anyone in the Fort Lauderdale area who is interested in making quality video productions. I am currently working on the pre-production phase of a science fiction/comedy. This movie is projected to be at least one hour in length, and will be filmed this summer, but I need additional people. If you are interested, please write me at the address below:

Durson Production
c/o Rich Durr
2757 N.W. 92 Ave.
Coral Springs, FL 33065

... The main reason we include full addresses in the Producers' Bulletin Board and Filmmakers' Forum sections is so you can contact other filmmakers directly, if their film synopsis or production tips intrigue you.

Virginia Filmmaker

... If there are filmmakers in the Charlottesville, Virginia area who wish to collaborate on a film or just correspond about current film projects, contact me at the address below.

Russell Richards
1621 Trailridge Rd.
Charlottesville, VA 22903

Prized Possession

... I have spent the last four months searching up and down and hitting virtually every book store in town, but I still haven't managed to locate a copy of CINEMAGIC #4. I am mainly interested in the article about the construction of the aerial optical printer. If any of you fellow filmmakers happen to have an extra copy lying around or if you could possibly Xerox the article, I would appreciate it if you send it to this poor unfortunate person who calls himself a filmmaker. Also, I would be more than happy to pay back all material and mailing costs.

Bill Salyer
3255 Desert Inn #108
Las Vegas, NV 89121

... A very limited number of copies of CINEMAGIC #4 are available from Starlog Press. See the back issue ad in this issue.

Super-8 or 16mm?

... I would like your advice on the subject of cameras. I have been shopping around and have found two I like but can't make up my mind about which one I want. The two are the Elmo 1012S-XL for Super-8 and the Bolex H-16—a 16mm camera.

The problem is I don't know if I want Super-8 or 16mm. I would really like to do matte work and rear projection—and maybe even some front projection. In CINEMAGIC #10, David Renwick condemned super-8 for work. And again in issue #27 Paul Mandell put more emphasis on 16mm in the dynamation article I know there are a lot of pro's and con's about Super-8 and 16mm. But which one do you think I should get? I would appreciate any help at all you could give me, especially if you could recommend a camera for me.

Maxwell Drain
Easy Plex 75776,3533

... Camera choice is always a tricky question, but you are really picking between S-8 and 16mm. I suggest that it is a question of how much money you want to invest in filmmaking. Are you thinking in terms of career, or is this just a weekend hobby? 16mm is several times more expensive than Super-8. On the other hand you can do more, better and easier. If you have an eye on a pro-career, you will probably have to make your own demo reel in 16mm. almost no one will look at Super-8. Also, the Bolex H16 is a great camera and will last a lifetime. GOOD LUCK!

David Hutchison
Easy Plex 71036-1477

Finding Filmmakers

... A good number of people seem to be looking for budding filmmakers in their area. An interesting idea was brought up in the Filmmakers' Forum in CINEMAGIC #28, about a computer data bank for filmmakers. Maybe an alternative for CINEMAGIC readers is closer to home than they think.

I live in Hamilton (Steel City), Ontario, Canada and I faced the same problem of trying to find other filmmakers in my area. My solution was simply to put an ad in the local newspaper (dramatic & musical talent column): "Anyone interested in making short films please contact ...," etc. Within one week 16 people had contacted me. Fourteen people showed up at a meeting. Three close friends and three short films have emerged since then.

If this doesn't work and if you are still in school, put an ad on the school bulletin board, or the school newspaper. Try your local supermarket's bulletin board. Keep it in your local area and your general age group. Be patient, but be prepared—you may be surprised at the response to your efforts. Above all, be well organized in what you plan to do.

Dave Kovacs
Hamilton, Ontario, Canada

Cheap Latex Masks

... I have found a time and money-saving way to create latex face appliances without plaster casting. Using a plaster life cast of the actor, apply cotton and paper towels, dipped in

the desired color of slush molding latex, onto the life cast to form your creature. When it dries it will perfectly fit the actor's face.

I am interested in getting in touch with other filmmakers or makeup artists in the San Antonio, Texas area. Please contact me at 695-3170 or write:

Joey Castro
Star Route Box 34A
Hel., TX 78023

You're in the Army Now

... I am currently serving the last of a four-year enlistment in the Army. I hold the position of Motion Picture Specialist (MOS designation 84C-10). I joined the Army when I couldn't find work as a cameraman on the outside. I figured that, as a motion picture specialist, I would do more shooting than I would as a civilian and have all kinds of experience by the time I got out. I pictured myself shooting, 'Be All You Can Be' commercials or at least training films. They do some of that in the Army, but the majority of it is contracted out to civilian firms.

For the most part, the 84C jobs have been phased out. Almost no one in the Army shoots film. Most of us end up developing black-and-white prints in a still photo lab somewhere or driving a jeep. Most places have been switching over to video. If you are lucky you might get to shoot video. It depends on luck and where you get stationed.

The training is good, but it isn't anything that you wouldn't get from any film school. You will learn during the first year everything that you are going to get out of the Army. You have to sign up for four.

What I am saying is this: to those of you just starting out and hitting the first of those disappointments that you are going to run into, don't give up. And don't be lured into thinking that the Army might be a shortcut. It's a dead end for filmmaking. There is no easy way. The competition for the good jobs is just as stiff in the Army as it is on the outside. Maybe more so. And the good jobs aren't that good. They're just the best you can do while you're in. And there are obstacles that you never dreamed of. Whether or not you're good has little to do with it. And the bad jobs are the pits, to put it mildly.

We all make mistakes and we all accept a bad job now and then. If you join the Army you have no way out for four years. For me, those four years have been almost a complete waste of time.

Wes C. Caefer
1st Armored Division
APO NY 09326

Soundtrack Composer

... When I watch a film, I believe one of the most powerful forces at work is the music. In it, one can feel action, suspense, romance, beauty, or just about any other feeling. One way or another, the composer knows how to get you there, and keep you locked in a world all his own. For the amateur filmmaker, hiring Jerry Goldsmith, John Williams, or James Horner to compose a custom score for us is not the answer. None of us can afford it!

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my music; something that doesn't sound like a bunch of notes all jumbled together like some sequencer out of sequence. If you are interested in a soundtrack for your film (horror, sci-fi, fantasy, adventure, space, romance, etc.) or would rather here a demonstration tape first, please contact me at the address below.

Andrew Petterson
Rt 8 Box 268
Tucson, AZ. 85730

Audience Appeal

... Over the past few years of reading your magazine I've become intrigued by many of the listings of films that don't tend to make the local theaters. The Filmex Society (here in Los Angeles) is a great help, by showing a wide variety of films from all over the world, and occasionally including films of the SPFX/science fiction genre. Still, there is not a showcase for most of the tight-budget films in your listings.

I'm sure many of you readers are as interested as I am in actually seeing these films we've been reading about! Perhaps you could run an additional column, a follow-up to the Bulletin Board, for listing completed films, including information for screenings, video tape rentals and/or sales, or whatever means

are available for these films to be seen. Other readers, I'm sure, have other suggestions for getting these films to their audiences.

Thomas D. Luth
2506 Spaulding, #8
Long Beach, CA 90804

Illinois Filmmaker

... I am 17 years old and have been making simple short films for about one year. Because of my extreme lack of talent in many of the aspects of filmmaking, I would like to contact *anyone* in the Fayette County area who would like to work with me on science fiction, action, or horror films. Also, if there is anyone who is in need of a writer, actor, or the like, I would be very willing to help.

Brian Koberlein
Brownstown, IL 62418
(618) 829-5728

Laser FX

... Recently while going through a number of back issues of CINEMAGIC I noticed many people asking about a better way to do laser effects than scratching the film.

One method that gives better results is to use bleach. Using a very fine brush you can bleach the color out of the film leaving

a white streak that does not have the tell tale sharp edges that one gets when you merely scratch the emulsion off.

This method is more tedious and time consuming, as the bleach is slow to act and you may have to repeat the procedure. I recommend you clean the film before running it through your projector. If you don't want to take the time on every laser blast, this method works very well for large areas and is a very good way to make a clear frame if you need one.

Wes C. Caefer
1st Armored Division
APO NY 09326

A Direct Line

... Readers who have access to CompuServe can contact CINEMAGIC'S Editor David Hutchison directly through Easyplex E-Mail. His User I.D. is 71036,1477. He can also be reached through M.C.I. Mail #136-7254. **CM**

Address all correspondence to: CINEMAGIC—Filmmakers' Forum, c/o Starlog Press, Inc., 475 Park Ave. So., New York, NY 10016.

Due to the enormous volume of mail received, the editor regrets individual replies are impossible.

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GRIP KIT



Konica Video Tape

The Konica Audio-Video Division of Konica U.S.A. Inc. unveiled three new video tape lines including: 8mm, Super Pro and Super Hi-Fi. The Konica 8mm video tape will be produced in a metal particle formulation. "The timing of this product introduction is perfect," commented Mitch Ravitz, division National Sales Manager. "Since a number of companies are introducing 8mm hardware systems this summer, there will soon be a demand at retail for quality 8mm video tape. Konica will satisfy that demand," Ravitz asserted. The Konica 8mm video tape will be available in the fall in two lengths, 60 and 90 minutes. A 120 minute length will be on the market at a later date.

Both the Konica Super Pro and Konica Super Hi-Fi tapes feature hi-band oxide particle formulations. "These tapes," said Ravitz, "are designed to be used with the new generation of technologically-advanced video-cassette recorders that are expected on the market soon. These tapes will also produce improved performance with those video-cassette recorders currently on the market," he added. Konica will market its Super Pro and Super Hi-Fi video tapes in both VHS and Beta formats. The tapes will be available this fall, in T-120 and L-750 lengths.

Panasonic Video

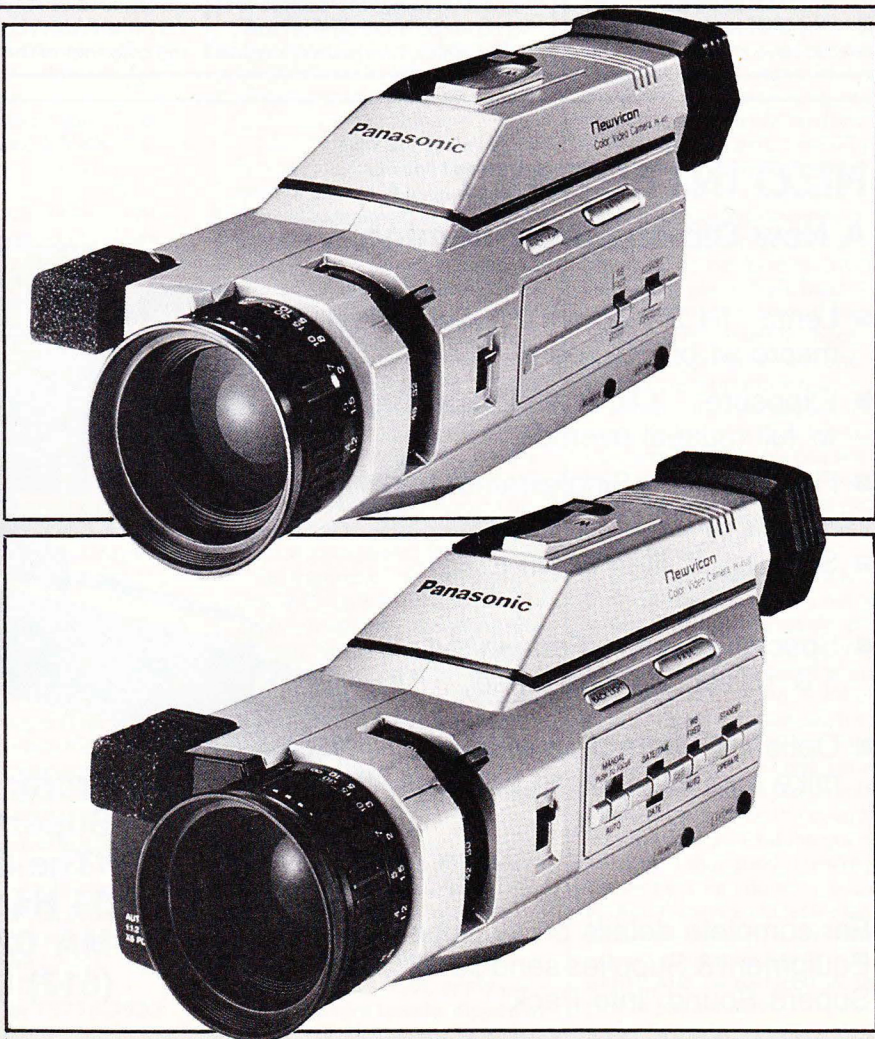
The Panasonic Company has introduced two new video cameras designed to be lightweight and easily handled. Models PK-412 and PK-452 can be held in the palm of your hand and feature a 1/3-inch Newvicon tube. Each are sensitive enough to produce high quality pictures.

Model PK-452 portable video camera features infrared auto-focus, 6:1 power zoom, and is equipped with an automatic iris and record capability down to 20 lux of light utilizing a 1/3-inch Newvicon pick-up tube. An f/1.2 lens opening with macro function narrows in on tiny objects with the same clarity as full-size vistas. A sensitive, monaural microphone offers excellent sound reproduction.

A 1/2-inch EVF electronic viewfinder/monitor is conveniently mounted in the back of the camera. Panasonic's EVF is also eyesight adjustable for convenient, comfortable viewing by eyeglass wearers. The PK-452 also features a backlight compensator and 260 lines of horizontal resolution.

The lightweight (2.5 lbs.) PK-452 is currently available for the suggested retail price of \$800.

Panasonic equips the PK-412 with a 1/3-inch Newvicon pick-up tube with 30 lux sensitivity. It weighs approximately two pounds and has 6:1 power zoom, an f/1.4 lens with macro function. A 1/2-inch b & w EVF is also included and adjusts for camera operators wearing eyeglasses. In addition, Panasonic has added a backlight compensator and auto white-balance fade switch. The unit provides 260 lines of horizontal resolution for excellent and detailed picture reproduction. Model PK-412 is currently available. The suggested retail price is open.



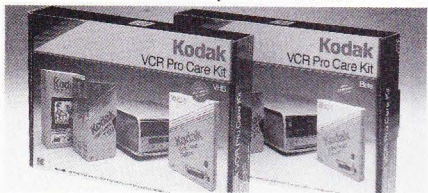
Video Care Kit

The Kodak VCR basic care kit includes a Kodak video head cleaner which maximizes cleaning tension along the tape path; a Kodak video head cleaner spray; two standard-grade Kodak video cassettes, T-120, for VHS-format owners, or two Kodak video cassettes, L-750, for Beta-format owners; and a deluxe dust cover, made of breathable dust cloth, which fits on a standard VCR.

The Kodak VCR pro care kit, like the basic unit, comes with either VHS or Beta-format cassettes. In addition to the dust cover and head-cleaner unit, the pro kit offers customers three extra-high-grade T-120 or L-750 cassettes, giving users a better product for repeated recording and playback, among other advantages over a regular grade cassette.

The pro care kit also includes "The Kodak Video Tape and Disk Guide to Home Entertainment," an 800-page book for home video enthusiasts which gives detailed information on a wide variety of video movies and programs available through retailers. The book has a retail value of \$13.95.

The Kodak VCR basic care kit will have a list price of \$44.95, while the Kodak VCR pro care kit will have a list price of \$64.95.



Still Video System

The results of years of research and development activity was recently unveiled at the 1985 Summer Consumer Electronics Show when Konishiroku Photo Ind. Co., Ltd., Japan, demonstrates a prototype of its unique Konica Still Video Camera, Player and Printer. The system uses a two-inch floppy disk to store still images of what is displayed in the viewfinder.

The compact, battery operated Konica Still Video Camera weighs 2.2 lbs. and features through-the-lens viewing, a 9-27mm, f/2.8 zoom lens and the shooting rate of eight frames per second maximum in the continuous mode. The camera operates in two modes—single and continuous, which allows 50 frames of video images to be recorded on one video floppy. The image is recorded on a 1/2-inch CCD that can record up to 180,000 pixels. An LCD control panel displays the recording track number, date and time, signal of continuous shooting mode, self-timer, on/off signal and low-light warning.

The Konica Video Player portion of the system is also compact and plays back what

is recorded on the floppy disk in single frame or continuous frames. The player also displays both the date and time the image was recorded. It also features frame and field playback modes, and forward and backward track selection. The video floppy disk measures approximately two inches and weighs 1/4 ounce.

The Konica Video Printer produces a hard-copy print-out of the image from the still video camera. It can also print out any frame of video onto color paper creating a 5" x 7" still print. The printer will actually be the first component of the system made available, because it can operate separately from the rest of the system. The printer can be hooked up to any video source and print out the video image from that source onto photographic paper. **CM**



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Each year we try to schedule our tour of the Official STARLOG Festival into different cities around the country. We want to make sure that all readers of STARLOG, FANGORIA and CINEMAGIC have an opportunity to attend (no matter where they live), to meet the staff and celebrity guests, to see the exciting films and other programming.

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Please take a couple of minutes to answer five simple questions that will aid us in planning the kind of science fiction, horror and fantasy weekend that you will enjoy.

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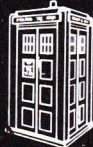
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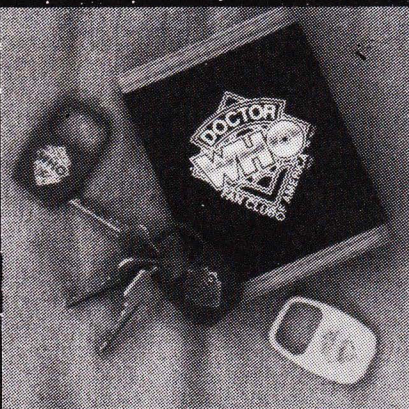
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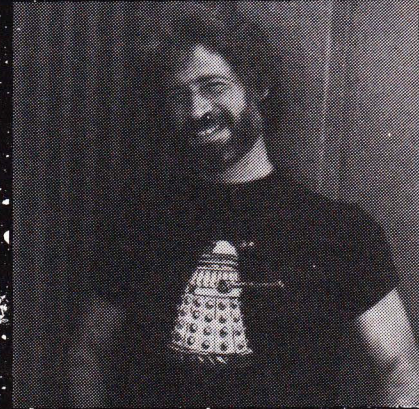
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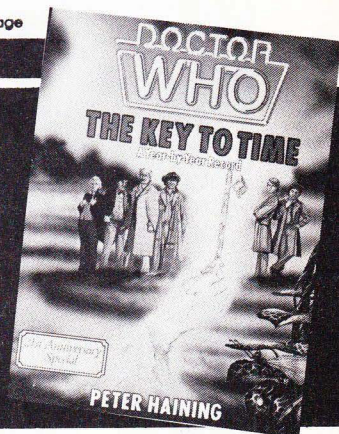
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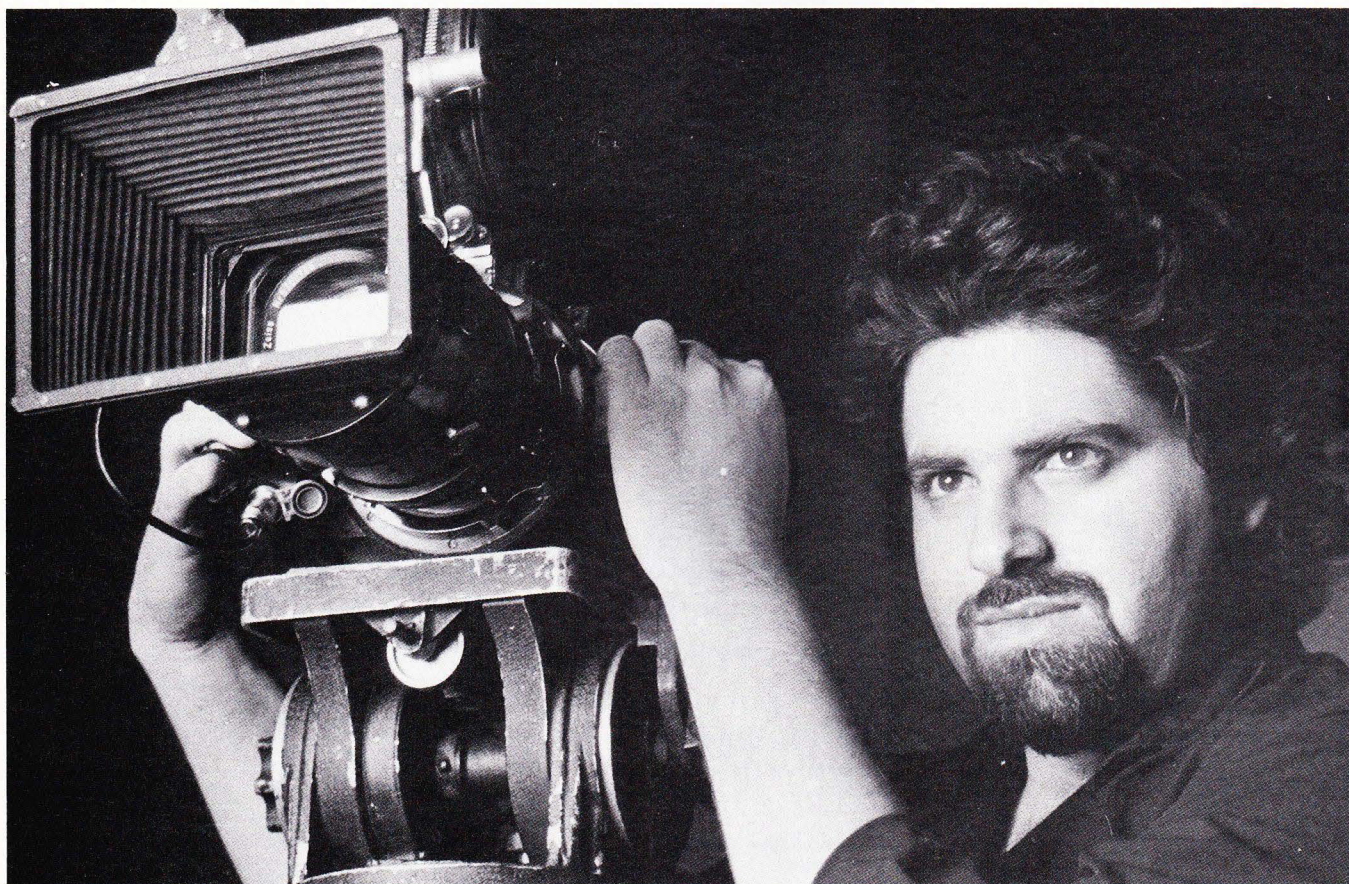
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On LOCATION

The Making of **Strange Tangents**

*A former professional magician has
become a special-effects wizard.*

By JOHN CLAYTON



PHOTOS: COURTESY OF MARK CHORVINSKY STUDIOS

Filmmaker Mark Chorvinsky has always had a flair for magic. After performing as a magician for several years, Chorvinsky decided to concentrate his energies on bringing his magic to the silver screen. The result of his efforts—after years of work with many people who volunteered their time and talents—is a 23-minute special-effects extravaganza film called *Strange Tangents*.

Strange Tangents is, appropriately, a story deeply rooted in black magic and the occult. An old master sorcerer summons his most promising apprentice—a beautiful young woman named Aria—on the ruse that he is dying and has very important things to tell her before he

passes on. Aria has decided not to pursue her magical studies any further and is reluctant to visit him as he lays on his death bed.

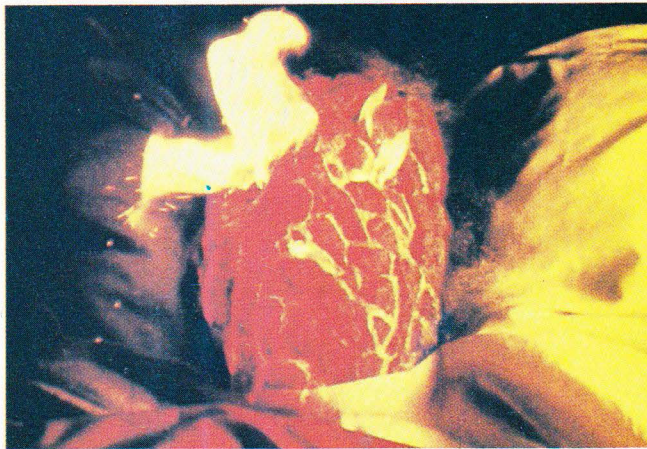
A voice calls to her as she is browsing through a museum of occult objects and biological freaks. The voice instructs her to remove a small stone amulet from its exhibit case, which she does by invoking magic. Once she has the talisman in her hands, she becomes a burning streak of light and goes rocketing half way around the world to the wizard's mountain-top den—all in a matter of seconds. The talisman, she's told, is a teleportation device.

Meanwhile, the wizard is in the throes

of death—but it's no ordinary death. He's paying for all the years that he has enjoyed the power of magic. He's in a state of flux. He must endure brutal transformations. His face becomes molten and sprouts volcanic fissures. He glows red like bubbling lava; Then, he's back to normal again, but visibly weaker. Suddenly he's a gelatinous mass of vile, grotesque goo. His eyeball pops out with the popping sound of a champagne cork and then rolls down his slime-covered cheek. He groans in agony.

The wizard makes Aria promise to continue her magical studies. It's a trick. Once she's vowed to do as he says, he exposes his charade. He was never dying or even sick. A sorcerer can never go back

Above: Director Mark Chorvinsky at the camera.



Due to a strange ailment, the Master has been undergoing bizarre transformations. Most recently his skin has become covered with rock platelets. The Master spasms and suddenly becomes rigid. Molten lava pours from his eyes and from between the rock platelets that compose his face. Eyes burst into flame, the master glows intensely, and as the glow dies down, the Master regains his normal appearance as his flesh literally crawls along his face in dentritic patterns.

on his word, even if tricked into giving it. The poor girl has no choice now but to become a full-fledged sorceress and practice black magic for the rest of her days.

Aria furiously grabs the talisman and teleports back to the museum. She startles her boy friend, who has been looking all over for her, by "popping in" on him. She's dressed like a witch. She left the wizard's den in such a hurry that she forgot to change back into her street clothes after donning a black robe to invoke magic in an effort to save the wizard's life. Her boy friend is dumbstruck. She feebly mutters "I can explain."

The whole story is told in fantastic images that make the magic being invoked by the characters seem real. The special effects play a pivotal role in telling the magical story of *Strange Tangents* and they are dazzling. Chorvinsky set up his own studio and produced all of the effects in-house.

"The story for *Strange Tangents* came out of a story for a feature-length fantasy film that I began developing back in '77," Chorvinsky begins. "I still hope to produce the feature, but I wanted to go into production on a less ambitious project that I could actually produce on a much lower budget. The only character in *Strange Tangents* that will have an impor-

tant role in my planned feature will be Newt, a stop-motion salamander. I wanted to work within the mythos I was developing for the feature because I really liked the world I was creating, so I adapted it into a much shorter and simpler script, which became *Strange Tangents*. I wanted to learn special effects and I also wanted to test the stop-motion Newt character, so that's how the film evolved.

"There are 129 special effects shots in *Strange Tangents* and they contain over 400 separate elements," Chorvinsky elaborates. "The thing that attracted me most about the project was that I could create so many special effects and still have them all fit within the storyline."

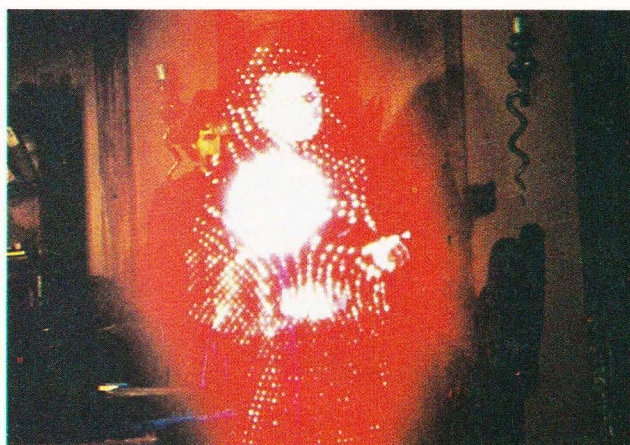
Twenty seven miniature sets were built to bring the magical story to the screen. One of them, the wizard's den, took more than a year to build.

"On the whole, the miniature work was the most demanding and time consuming work on the film," Chorvinsky continues. "Probably the most complicated shot in the film was the shot that introduces Newt. It involved front projection and Ray Harryhausen-esque dynamation. Newt walks out of a fireplace in the wizard's den. The fireplace is a six-inch-tall miniature and the whole background is in 1/12 scale. Newt was in a larger scale than the set he was in. We had to make a

transparency of the miniature set, project it onto our front-projection screen, and then cut a dynamation-like matte out of Scotchlite front-projection material. Then, we had to animate Newt coming out from *behind* the Scotchlite matte. In effect, we sandwiched Newt between two elements of the background. It's a technique that Harryhausen calls a 'reality sandwich.'

"The only other shot in the film in which we used a reality sandwich was the shot in which Aria is preparing to tap a magic crystal in order to invoke magic and save the wizard's life. We had a pin-registered live-action plate showing Aria behind a table. Newt comes into the frame and walks over next to Aria and *behind* the same table. Then, Raven (another live-action character) comes in and stands next to Newt. The shot shows a stop-motion character (Newt) *between* two live-action characters and also *behind* the same table as them. It was all done in-camera without having to resort to opticals."

The shot is seamless. Placing Newt between two live-action characters helps to make him seem more lifelike, which helps the audience to suspend disbelief and forget that he's really just a stop-motion puppet. The particular scene mentioned above is pure movie magic. A three-foot-tall salamander walks upright



Aria, in a huff, teleports from the wizard's den at the end of *Strange Tangents*. All of the optical effects in the film were done in house at Chorvinsky Studios.

and carries on a conversation with the human sorcerers. Newt is a very appealing character and you want to believe in him. The illusion created in this shot gives you a valid excuse to go beyond reason and believe in a walking, talking, *living* salamander that dabbles in magic.

"The stop-motion model of Newt was sculpted by William Dempsey with assistance from Michael Baker," Chorvinsky acknowledges. "I worked with them constantly on the design as it evolved because I'm the original designer of the character and was very specific about how Newt should look. Dempsey is also a very talented stop-motion animator and I think he'll go a long way in the field. He also machined the armature for Newt and has just finished a fantastic armature for our next film, *Creatures of Darkness*. We have a full machine shop at my studio now, which we didn't have when we were working on *Strange Tangents*."

"The wizard's den was the most complicated miniature set that we built for *Strange Tangents*," Chorvinsky explains. "It took about a year to build and eight to 10 people helped construct it. Michael

Baker—an amazingly talented miniature builder and sculptor—did a great deal of the fine detailing. He did most of the scratch building and original sculptures that we used. Dusty Vorhauer built many of the biological freaks exhibits in the 'pit room' of the museum set. Hishan Abed—now studying film at USC—also created many of the museum exhibits. Many of the exhibits don't really show up on film, but they add a great deal of atmosphere in the background. Greg Snook did all of the lighting on the miniature sets and many other people donated their time and talents.

"Once the miniature sets were built and photographed, we front-projected the background plates onto our 10-foot by 13-foot front-projection screen and filmed our actors in front of the screen. Most of the action in the film looks like it takes place on elaborate sets. It actually takes place in front of projected large-format transparencies of our miniature sets.

"We used a technique that I don't think has ever been used before to create one of our sets," Chorvinsky reveals. "We set

up a number of miniatures and made a large-format transparency of them. Then, we took that image and front projected it with our actress in front of the screen so the miniatures were now in her scale. Next, we took the front-projection composited film of the actress and the miniatures and front projected that onto a piece of Scotchlite in the doorway of a second miniature set. The final piece of film looks like Aria is standing in a doorway at the opposite end of a long room and there's another long room behind her. In fact, there were *no* rooms at all. In effect, we put our actress between two large miniature sets.

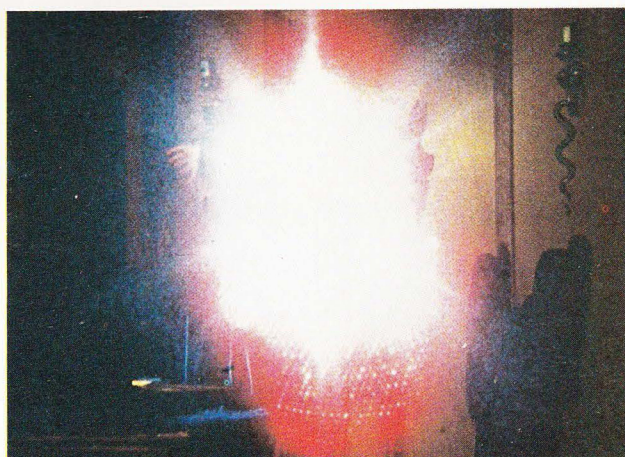
"Another technique, which is rather unusual, was the use of front projection on our animation stand to sandwich some shots together. We took large-format photos of some of our miniatures and added dyed skies (from an aquarium tank set-up) and other elements by front projecting them right onto the photos on our animation stand—with front projection material cut to cover the appropriate areas of the scene."

One very amusing bit of comic relief in *Strange Tangents* occurs during the old wizard's transformation sequences. The wizard has become a mass of jelly-like goo, oozing slime from every pore in his body. Suddenly, his eyeball pops out with a cork-popping sound. The description sounds horrible, but it's really quite funny when you see it on the screen.

"The popping eyeball was a happy accident," Chorvinsky admits. "The people who made the plastisol cast of the wizard for that sequence—against my better judgment—sealed his eyeball into a slit inside his head. You couldn't see the eyeball at all, so we cut the eyeball out and put it in the slit so it was at least visible. When we blew air into the dummy to make it pulsate, the eyeball just popped out because of the air pressure behind it. I loved the effect, so I left it in the film and simply popped my cheek by sticking my finger in my mouth to create the sound effect. I also loved the way the eyeball slowly slid down through the glycerine and K-Y Jelly slime on the wizard's cheek. It's a fun effect that lets you laugh.



Raven in the miniature den via front-projection process photography. The miniature fireplace is actually six inches tall. A 10 ft. by 15 ft. front screen was used and lighting and plate photography by Greg Snook of Chorvinsky Studios.



"We've had some success marketing *Strange Tangents*—to the extent that you can have success marketing a short film. It's been shown at several different museums and theaters. We haven't made much money, but we've received honorariums and distribution fees. We exhibited the film at the Cannes Film Festival last May and distributors from 15 different countries expressed interest in distributing it in their respective countries. We haven't had the film shown on cable or regular TV stations because we're still hoping for some sort of theatrical release—possibly in an anthology of shorts. We've had the film distributed in eight Chuckie Cheese family entertainment centers in the Washington, D.C. area. It was selected for the next Filmex in Los Angeles. It's been shown in two theaters in London and it was screened with *Time Bandits* by the American Film Institute at the Kennedy Center for the Performing Arts in Washington, D.C. last September.

"When making *Strange Tangents*, we had a volunteer crew of over 40 people who worked for free. They saw what we were doing and wanted to get involved. During the final six months of post-production, I hired six people to work full time in my studio and create the effects. They're all still working for me on my next film and they've got their own projects in the works at the studio. Many of the people who volunteered to work on *Strange Tangents* have offered their services for my next film, *Creatures of Darkness*.

"*Creatures of Darkness* will be a 35mm feature-length horror/fantasy film with a budget between one and one-and-a-half million dollars. I'm just starting to get backing for the project. *Strange Tangents* is a 16mm film with a 23-minute running time—it cost \$100,000. If all goes well, I hope to have *Creatures of Darkness* ready for release in about three years."

Chorvinsky studied cinematography and special effects at Temple University. His most influential professor was Raymond Fielding, author of the Focal Press book *The Technique of Special Effects Cinematography*. Chorvinsky highly

(continued on page 32)



Director/Effects co-supervisor Chorvinsky uses Stop-motion animation techniques to fly a magical crystal into a rotating window to another world.



Aria throws a magical force bolt into the museum display. Light animation was composited in camera with live-action.

CINE MAKEUP

Creating Synthetic Flesh Cures for Problem Skin

*When you create fantasy creatures for film,
ugliness is only skin deep.*

By JOHN DODS

PHOTO: © 1981 UNIVERSAL



Gelatin was used to create the robot facial appliances for Universal's *Heartbeeps*.

Synthetic flesh! Synthetic flesh!" rasped the mad Dr. X in a climactic scene from the 1932 horror film as he reshaped his features with handfulls of a dough-like, pliant material. With his natural face suitably altered, he would leave his lab to kill in safe anonymity.

Modern makeup craftsmen have more cordial intentions when they compound the mixtures they use to replicate human

skin. They alter faces, and simulate life with a variety of flexible materials. Here is a rundown of the formulas popular with today's synthetic fleshmakers. Each material has drawbacks and advantages.

The safety cautions that accompany this article reflect my intention to henceforth include such data in my CINEMAGIC writing. Makeup and special effects artists live and work in a perilous

sea of toxic chemicals. *Don't drown.*

Smooth-on

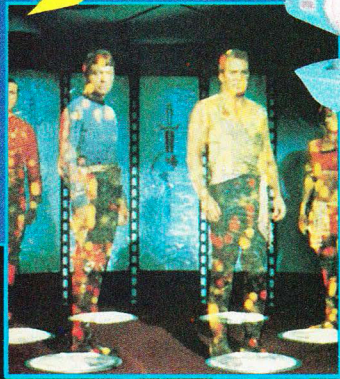
PMC-724, commonly called "Smooth-on" is a polyurethane elastomer. It consists of two liquid components which react when mixed together at room temperature to produce a flexible, opaque white material. Smooth-on is produced for use as a mold-making material. Rick

PHOTO: COURTESY DICK SMITH

Right: The dean of American makeup artists, Dick Smith applies foam latex appliances to actor F. Murray Abraham, who portrays Salieri in *Amadeus*.



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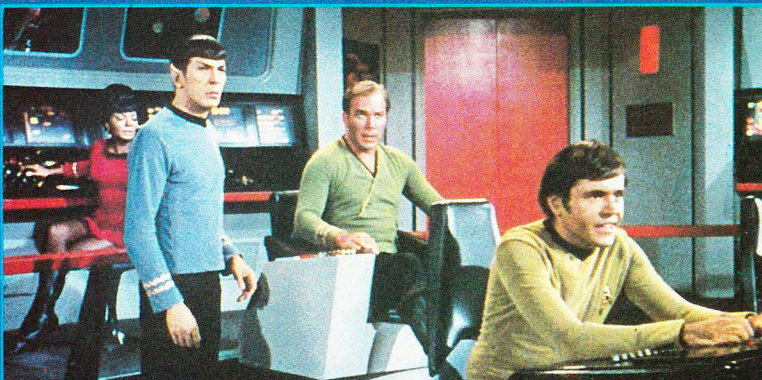
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Ed French created this strikingly realistic corpse (work seen in progress) using gelatin for the feature film *CHUD*.

Baker used Smooth-on to create the stretching "chango-heads" for use in the man into wolf transformation sequence of *An American Werewolf in London*. Dick Smith used Smooth-on to make the inflatable bladders that pulsed beneath William Hurt's foam rubber skin in key moments of *Altered States*. The great elasticity was imparted to the material through the addition of a plasticizer sold by the same company. Smooth-on *cannot* be applied to human skin and seems to be only suitable for constructions.

You can use plaster molds with Smooth-on, but their porous surfaces must be sealed with shellac or potter's soap. The dry sealer must be coated with a suitable release agent such as Sonite Seal Release or a silicone-based release agent; these are allowed to dry before pouring or brushing the Smooth-on into the molds.

The mixing ratio of the two primary Smooth-on components by weight is critical. An error of 5% or more can result in a poorly cured piece or a even pile of goop. You must use an accurate scale to insure a successful positive. O'Haus triple-beam balance scales are widely used in the industry. These sell for around \$125. I have used an inexpensive postal scale with successful results.

Cured Smooth-on can be painted with acrylic paints mixed together with Monsanto's "Santisizer 278" plasticizer. This material actually migrates into the Smooth-on and becomes part of the material; it won't rub off or peel. The 278 is mixed with the paint using a ratio of about one part plasticizer to five parts paint. This will take 24-48 hours to blend together and *will not work* if used right away. Mon-



PHOTO: JOHN DODS

John Dods used Plastisol to create this realistic face for the low-budget thriller *The Deadly Spawn*.

santo will send you a sample (about 1/2 quart) on request. Smooth-on can also be colored with conventional theatrical makeup materials.

CAUTION: Polyurethanes like Smooth-on are very dangerous to make. Although nearly odorless and seemingly harmless, the chemicals in the mixture can cause allergic reactions in the lungs leading to asthmatic attacks and respiratory distress. They can cause skin and eye ir-

ritation. They may cause liver and kidney damage. Do not work with polyurethanes without a respirator approved for use with this material. Do not get it on your skin. Use it only in a vented area.

Plastisol #4

IASCO Company sells this "super-jelly-soft" material primarily for use in making artificial fishing bait. The cured plastisol moves and feels like flesh. As with

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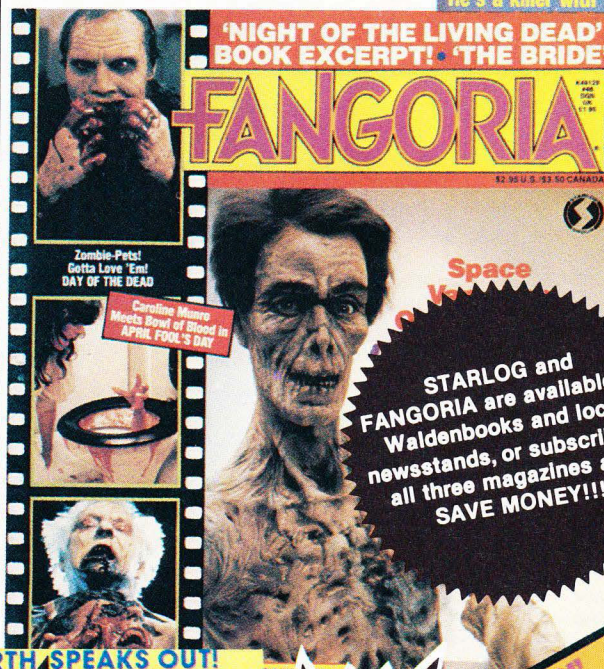
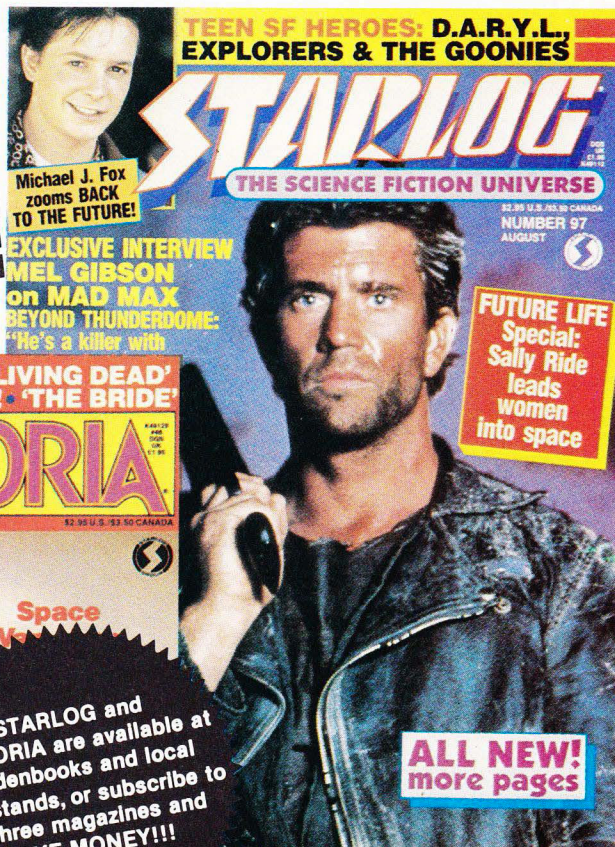
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Smooth-on, you cannot apply Plastisol to human skin. Unlike Smooth-on, Plastisol is translucent when properly pigmented, giving it a realistic skin-like appearance.

Plastisol #4 is a one-part, heat-cured polyvinyl-chloride material—a “thermo-plastic.” It is a white liquid which becomes transparent as it is stirred over low heat. Tan (“flesh”) pigment is available from IASCO, as are other colors. These are added sparingly to the heated material. Over pigmentation results in an opaque rather than translucent skin. The heated Plastisol is poured into warmed plaster molds. I was successful using castor oil as a release agent in Hydrocal molds; the molds didn’t need to be shellacked. You can demold when the molds have cooled. The Plastisol must be removed carefully because it tears easily; it is only slightly elastic.

Plastisol takes theatrical makeup well, although it tends to be more “oily” than human skin. You can also use permanent ink markers to color the material. Super-glue adhesives can be used to bond the Plastisol. IASCO sells a vinyl adhesive which bonds Plastisol under pressure within 12 hours or so.

CAUTION: When Plastisol is heated to over 400 degrees F or cured for too long, it decomposes releasing highly toxic hydrogen chloride fumes. Even when Plastisol cures at a low temperature, it produces disagreeable fumes which should not be inhaled. Unless a professional venting system is available, Plastisol should be cured out of doors and stirred constantly on a hot plate, using a fan to direct the fumes elsewhere. Use a meat thermometer to monitor the temperature. The solvent in the Plastisol is also toxic. Effects of over exposure include headaches, dizziness, or asphyxiation. Do not breathe the vapors. Some Plastisol pigments contain lead; do not get them on your skin.

Skin-flex

TC-610—or Skin-flex—is a three-component, polyurethane system specifically designed for the manufacture of skin-like parts. Like skin, it is slightly translucent. As with Smooth-on, Skin-flex can be produced in different degrees of softness, depending on the ratio of the ingredients.

The manufacturer’s representative told me that Skin-flex is used by the Disney organization to produce the skin-like material covering some of their Audio-Animatronic figures; this was said to replace the previously used Plastisol, which deteriorated too rapidly. An industry source told me that Skin-flex was also used to create the hide covering the full-scale dragon parts created for *Dragonslayer* as well as the shark from *Jaws*. More recently, Robert Short used skin-flex to create Darrel Hanna’s fishtail for her role in *Splash* as well as the Dolphins in *Cocoon*.

Makeup artist Kevin Haney created the

Effects artist Stan Winston supervises the application of gelatin appliances to Andy Kaufman’s face for the film, *Heartbeeps*.

PHOTOS © 1981 UNIVERSAL

stretching head for *Chud* using Skin-flex. He spoke about his experience with this material: “We used Skin-flex because it could stretch more than two times its own length without tearing. Foam latex couldn’t do that”, explained Haney. “We sealed the plaster molds with polyvinyl alcohol (“PVA”) purchased from the Smooth-on company. PVA is like a water-soluble plastic cap material. Then we applied a coat of “Green Soap” (tincture of green soap)—Ivory works too—using a very thin application.

“We powdered that with chalk, buffed it, and used the separating agent that BJB sells for use with Skin-flex. There may be problems if the soap is still moist when the Skin-flex is poured into the mold because Skin-flex is moisture sensitive. The Skin-flex had to be cured at room temperature because an oven cure would have melted the materials blocking the moisture in the plaster from the Skin-flex.”

Haney used a formulation of acrylic paint mixed with prosthetic adhesive “Type A”, using a ratio of about 50:50 “This stuck like glue to plasticized Skin-flex” says Haney, “But not so well to the unplasticized material.” Theatrical makeup can also be used to color Skinflex.

Haney also found that sunlight seems to cause Skin-flex to deteriorate—especially if it’s unpainted. He used Crazy Glue mixed with baking soda as an adhesive. “Skin-flex itself can be used to bond cured pieces of the material to itself if limited adhesion is adequate”, says Haney.

Haney used about 40-percent plasticizer in his formulation. “When you get much above 40-percent,” he explained, “The material starts to lose its ‘memory’ and you begin to get goop.”

CAUTION: Skin-flex, like Smooth-on, is a Polyurethane and the same cautions apply. Polyurethanes are very dangerous to make. According to the U.S. Department of Labor material safety data sheet on Skin-flex: “Overexposure can result in mucous membrane irritation, tightness of chest, irritation of the respiratory tract, coughing, headache, and shortness of breath. Exposure can lead to allergenic

sensitivity. This material is dangerous. Do not inhale its vapors. Do not get it on your skin.” Kevin Haney reports that the RCA building in New York City has forbidden the use of isocyanate-producing materials (such as Skin-flex) in their building.

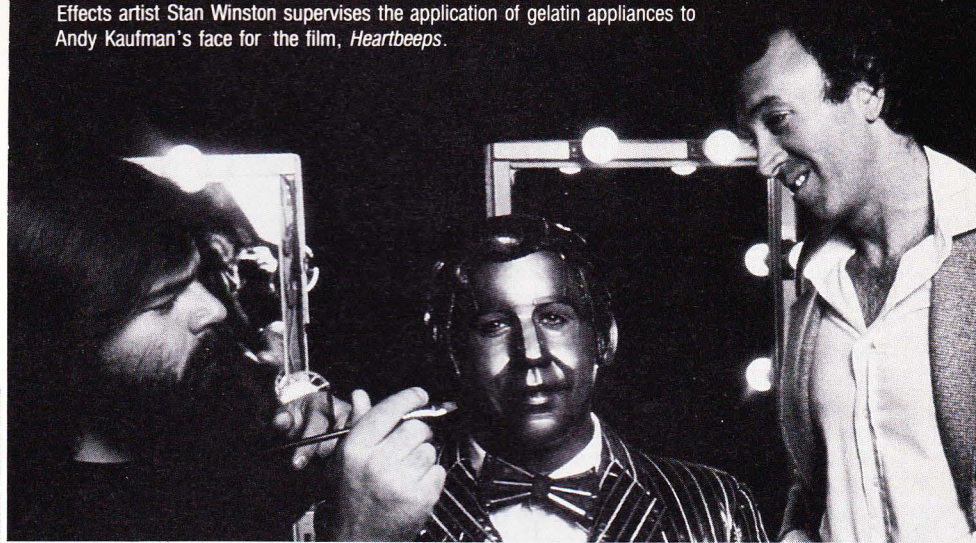
Gelatin Skin

Makeup artist Ed French clued me in on this excellent—and apparently “non-toxic”—formula for making realistic synthetic flesh. It is made using ingredients that you may find in your kitchen or bathroom. The gelatin skin has the translucency and weight of real flesh and can be applied directly to human skin. French told me that the oriental eyelids from the 1937 film *The Good Earth* were made of gelatin. More recently Stan Winston chose gelatin to create an array of robot facial appliances for the big-budgeted (but seldom seen) picture *Heartbeeps*. Lance Anderson use gelatin to create the skin of the starchild in *2010*.

Ed French used gelatin to create Hugo—a strikingly realistic corpse for use in the feature film *Chud*. He explained how Hugo was created:

“Ninety percent pure glycerine is heated in a pot. It shouldn’t be allowed to boil. Overcooking affects color and consistency. The 300-bloom gelatin granules are slowly poured into the hot glycerine; they are stirred until liquid—this may take fifteen minutes. Tints are added at this point. I use artist’s oil colors. Too much pigment produces opaque skin. Sparing use of the pigments produces skin that has the translucency of real skin. The colored mixture is allowed to cool for five minutes before slushing it into the mold. The mold is rotated as the material cools in order to build up an even thickness of about one inch. I used expanding styrafoam to fill the core. I could have used plaster but it would have become very heavy. The gelatin construction was demolded when it was cool.”

Do not confuse this formulation with Jello, which contains water. No water is used in the gelatin/glycerine mixture and it does not appear ever to shrink. Ed



French's Hugo was about two years old when I saw it and it did not seem to have deteriorated. This material, however, can melt if it is exposed to high temperatures. Additional coloration can be applied to gelatin skin using watercolors or theatrical makeup.

The following formula will produce enough synthetic flesh to make one human-sized head: 2000 grams of 90-percent-pure glycerine, plus 800 grams of 300-bloom gelatin. Gelatin is usually identified by a "bloom" number. A low bloom number is less strong than a high one. A 300-bloom mixture is recommended to create a flesh-like consistency.

Methocel Modeling Material

Here is a formula for a synthetic flesh

makeup material devised by the master of that art, Academy Award winner Dick Smith. It is printed here with the permission of Mr. Smith. The information following is presented in good faith but no warranty, express or implied, is given. Dick Smith assumes no liability for the use of this material.

MMM-methocel/pectin modeling material is designed for direct application to human skin. It can be spread on the skin with a spatula. It adheres well and is flexible. It is excellent for making extensive scarred areas. Model roughly, then smooth with water on fingers or brush. You can use it to create features, but since its surface cannot be made really smooth, it is only suitable for characters with very

rough skin. Use glycerine on your fingers to get it as smooth as it will go.

The basic formula follows: 20 grams Dow Chemical Methocel K15M premium (standard is ok, too) mixed into five ounces of boiling water. Add and stir in 50ml glycerine. Add and stir in food color (optional). Cool in refrigerator; stir occasionally until jelled.

The transparent paste that results will turn moldy unless refrigerated. It can be preserved by adding 0.2% Methyl Paraben to the water and the glycerin. That would be one gram of Paraben in 500 grams of liquid. Water (use distilled) must be heated until the Paraben will dissolve.

MMM must be sealed to prevent it from drying out. Plastic cap material works fine as a sealer but it may be picked up if brushed over too much. Drying the surface of the MMM with a little warm air before applying the sealer helps. A stronger but thicker sealer is a good artist's acrylic-gel medium like Winsor & Newton. Pat it on with a piece of white foam sponge.

For very realistic third-degree burns, add about one teaspoon of red food color and ¼ teaspoon of yellow during formulation of MMM. Put a thin sealer on the skin area to protect it from staining. Apply a thin layer of MMM (blood color) and blend off the edges. Seal the edge area but not the central part. Apply a grey/flesh colored face powder to cover the red MMM. Rub the surface to break up the powder crust and reveal the "raw flesh" beneath. Use a bit of water on your finger to get a clearer effect. Seal the burn surface with acrylic gel. Use Panstik to blend off the edges.

Foam Latex

While polyurethanes like Smooth-on and Skin-flex seem to be displacing other materials in the fabrication of effects constructions, foam latex remains the synthetic flesh most commonly used to alter human physiognomy.

Tom McLaughlin's foam latex formulation has become for many film professionals, a welcome addition to the makeup effects scene. Rick Baker chose it for use in the creation of the remarkable apes of *Greystoke*. McLaughlin's foam is considered to be an improvement over Bau foam with its shorter curing time and its ability (with the use of a high-rise agent) to foam to a great density. Rick Baker in *Cinefex* # 16 says, "I used to consider five volumes [five times the starting volume, after foaming] soft, but Tom could give us ten to twelve volumes. No matter how good it is, your mechanism never works at a hundred percent because it's fighting that rubber. With ten volume foam, there's much less of a fight."

McLaughlin foam shrinks very little—perhaps only eight percent. This is not true of some foams, such as the popular R & D, which shrinks so much (around 30%) that the resulting prosthetics may not fit

Bernadette Peters and Andy Kaufman wearing Stan Winston's gelatin appliances in a scene from *Heartbeeps*.



the actors properly. McLaughlin foam's low shrinkage is apparently due to the high rubber content of the base material. The high rubber content also makes the product cost more than R & D (about \$60 vs \$30).

As Tom McLaughlin points out in his notes on his system (available from Alcone Company), "If you are a first-time user, your first few foam runs may be disastrous. There are so many variables to keep track of that there is no alternative but to keep explicit written notes."

I had mixed eight foam batches that did not gel before I learned to follow this advice. I went to the hardware store, bought a thermometer/hydrometer for measuring temperature and humidity (it cost \$12), and started keeping careful notes. Now my McLaughlin foam gels. Usually, to someone used to R & D foam, McLaughlin foam is a very pleasant revelation.

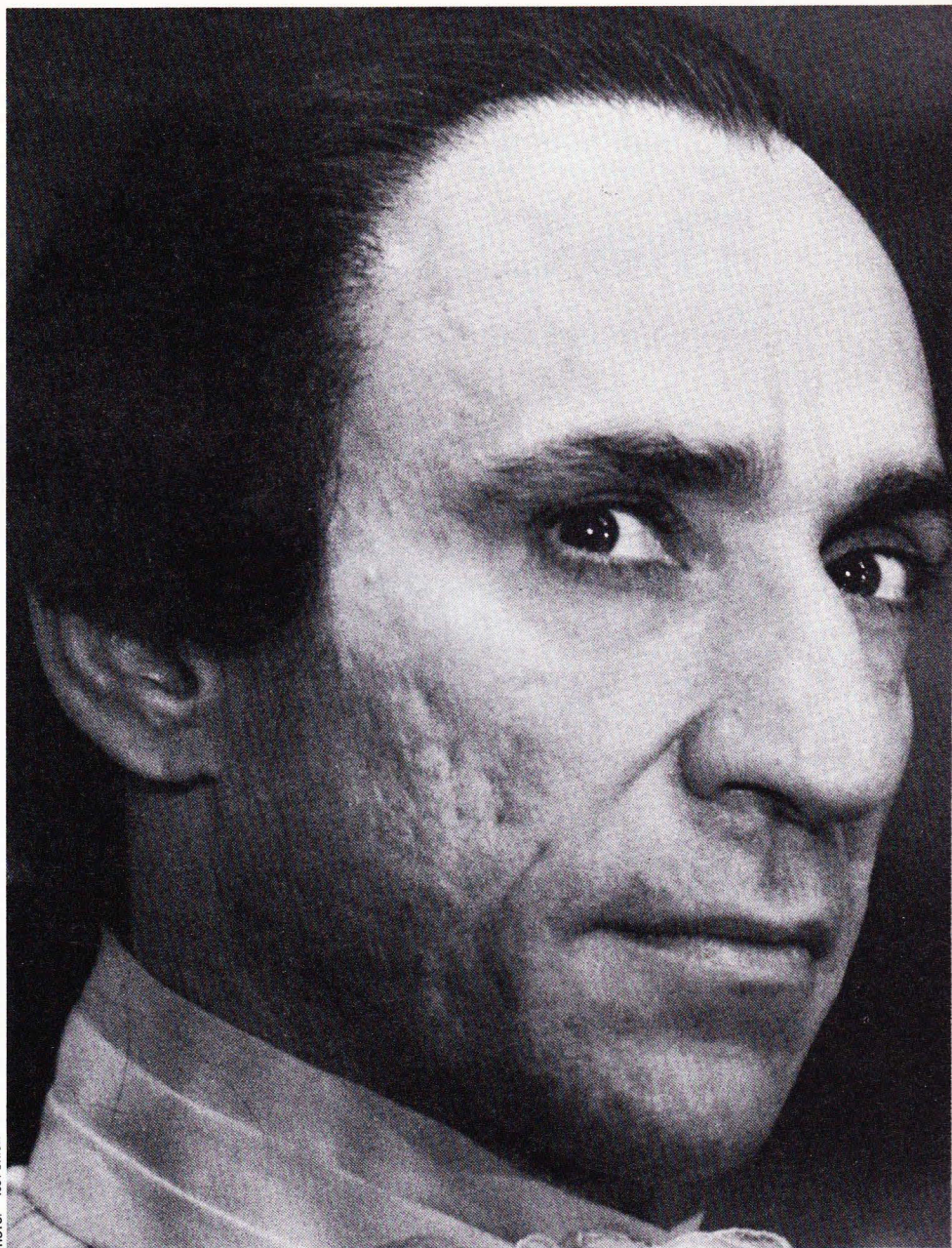
CAUTION: Ammonia is present in the base of foam latex compounds. It is especially high in McLaughlin foam base. Ammonia is a toxic chemical. It can cause irritation of the eyes, nose and throat. Ammonia can burn the tissues of the air sacs in the lungs. This results in the air sacs filling with fluid (edema), making breathing difficult. Pneumonia is often a complication of this disease. Wear a respirator with a filter approved for use with ammonia (unless you have a professional ventilation system). If you are practicing the technique of sniffing the latex for ammonia fumes in order to gauge the best time to add the gelling agent, *please stop doing it.*

Nose Putty and Derma-wax

Don't overlook the older and simpler ready-made synthetic flesh formulations. Sometimes simple materials are the best ones. Nose putty and Derma-wax are made for direct application to human skin. Derma-wax is softer; nose putty is more adhesive. Derma-wax can be shaped and blended more readily; nose putty is more durable. An application of spirit gum to the skin will help prevent perspiration from loosening Derma-wax. A half-and-half mixture of nose putty and derma-wax eliminates some of the disadvantages of each. They can be blended in a double boiler and poured into a container to cool. The edges of derma-wax can be blended into the skin using alcohol and a soft brush; putty is blended using cold cream.

There is much detailed information on the use of Derma-wax and nose putty contained in Richard Corson's *Stage Makeup*, available from Alcone Company. This superb book is the bible of makeup technique and includes much information on foam-latex prosthetic technique.

"Synthetic flesh! Synthetic Flesh!" It has been reinvented in many forms by the Dr. X's of today: modern chemists and makeup technicians. Benign in purpose and perfectly sane, they use it to bring fantasy to life on the silver screen. **CM**



F. Murray Abraham in his Oscar winning role of Salieri wearing Dick Smith's Oscar winning makeup for the film *Amadeus*.

SYNTHETIC FLESH SUPPLY SOURCES

Monsanto Co.: Plasticizer, Santisizer 270. \$70 per five-gallon drum. Sample (about 1/2 quart) on request. 800 North Lindbergh Blvd., St. Louis, MO 63167, (314) 694-1000.

Alcone Co.: McLaughlin foam latex, nose putty, derma-wax, theatrical makeup, O'Haus scales, Richard Corson's book *Stage Makeup*; 5-49 49th Ave., Long Island City, NY 11101, (212) 361-8373.

Smooth-on: PMC-724 ("Smooth-on") sells for about \$37 per gallon; 1000 Valley Road, Gillette, NJ 07933, (201) 647-5800.

IASCO Co.: Plastisol, pigments, and adhesive; 5724 W. 36th St., Minneapolis, MN 55416, (612) 920-7393.

BJB Enterprises, Inc.: Skin-flex (TC-610); 6350 Industry Way, Westminster, CA 92683, (213) 598-7777.

Sculpture House: O'Haus scales, gelatin (with no bloom designation so I don't know for certain if it's really suitable for synthetic flesh); 38 E. 30th St., New York, NY 10016, (212) 679-7474.

Borge Pharmaceuticals: Gelatin. Ask for "photo studio grade gelatin" for \$4.00 per lb., 9929 Hilbert St., San Diego, CA 92131.

Callahan Chemical Co.: Glycerine. 96% glycerine is \$20.38 gal., A 55-gallon drum is \$609.90; 200 Industrial Ave., P.O. Box 29, Ridgfield Park, NJ 07660, (201) 440-9000.

City Chemical: "NF Grade" gelatin. I don't know what this is equivalent to in terms of a bloom number (they don't either); 5 lbs. is \$34.50, 25 lbs. is \$122.75; 132 W. 22nd St., New York, NY.

Stop-Motion STUDIO

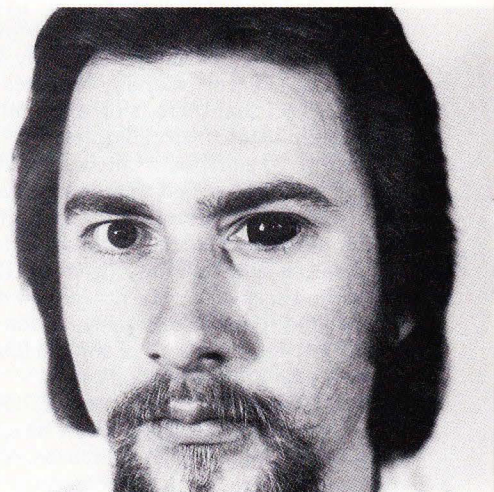
The Eyes Have It

"All's infected that the infected spy, just as all looks yellow to the jaundiced eye."

—Henry Wadsworth Longfellow



Choosing the right eyes for your monster is a very important decision. It helps to have a selection on hand for experimentation.



Rick Baker demonstrates the look of a scleric contact lens designed to create an animal effect.

Where is the Life of the Monster? The Eyes Have It.

By JOHN DODS

Dr. Frankenstein's famous exclamation, "It's alive!" came not when the monster rose from the operating table, but when he opened his eyes. Monster makers need convincing eyes to convey life in their creations. The life is in the eyes, and a fake looking pair is nothing but a dead giveaway.

Here is a list of eyeball supply sources. Taxidermy supply houses are a very cheap source of eyes and pupils; animal eyes are painted by hand and the quality will vary greatly with the skill of the artist; the more expensive eyes may not be the best. You may have to set the pupils into white plastic resin. This process is detailed in CINEMAGIC #17 in my article "Secrets of Graphic Gore." A pair of animal eyes costs between \$1.00 and \$8.00 per pair, depending mostly on size. A good pair of human eyes sells for about \$100.00.

Scleral and corneal lenses are produced for use over human eyes, in the manner of contact lenses. Corneal lenses cover the cornea only. Scleral lenses cover the white of the eye as well, disguising the entire visible eye. Corneal lenses sell for around \$400—\$500; scleral lenses for \$800—\$1,000. The price includes painting the lenses to specifications. Corneal and scleral lenses must be fitted to an individual wearer and may not fit anybody else.

Where is the life of the monster? The eyes have it.

CM



"Mountain Goat" eyes were used to create this third "Nightbeast" variation.

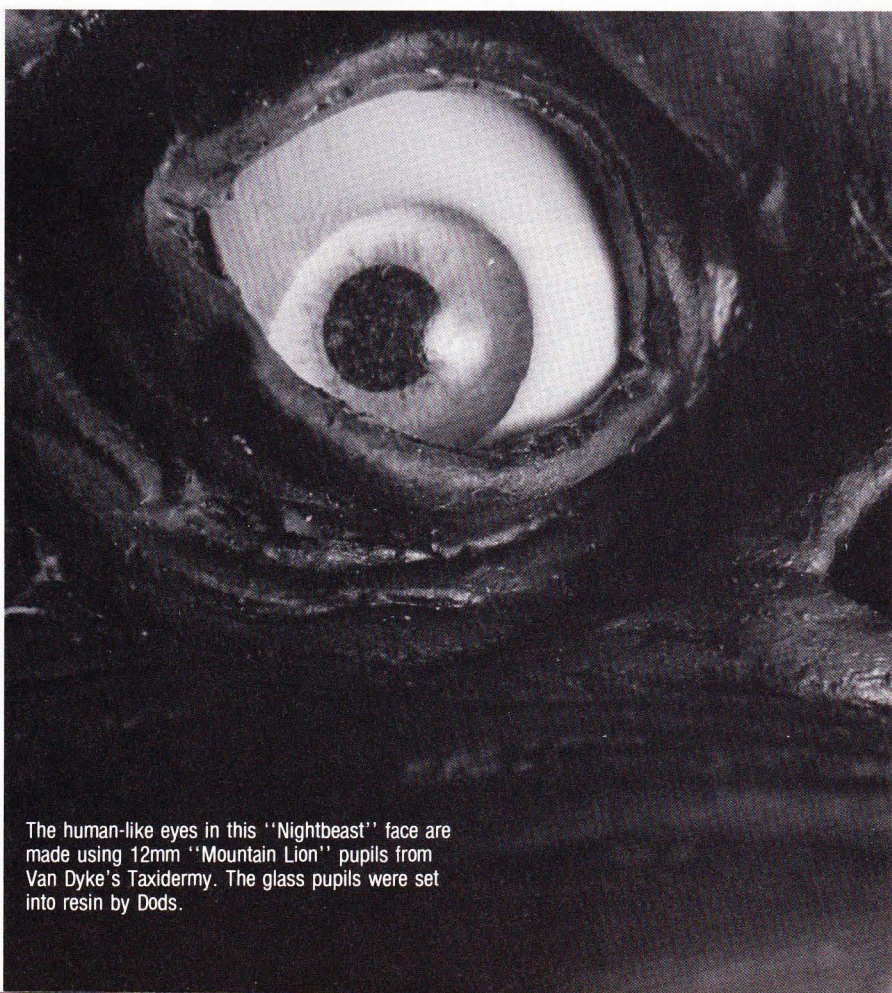
SUPPLY SOURCES

Theo Obrib, 209 E. 56th St., N.Y., NY 10022, (212) 758-0973. Scleral and corneal lenses.

G. Schoepfer, Inc., 138 W. 31st St., New York, NY 10001, (212) 736-6939. Sells everything from dolls' eyes on up to human-sized artificial eyes. Prices are high except when ordering in quantity (50 pairs or more). G. Schoepfer is a supplier to Jim Henson Associates (The Muppets).

Jonas Brothers, Inc., Denver Taxidermy Supplies, 1037 Broadway, Denver, CO 80223, (303) 777-3377. Animal eyes.

Van Dyke's, Woonsocket, SD 57385, (800) 843-3320. Animal eyes. Low prices.



The human-like eyes in this "Nightbeast" face are made using 12mm "Mountain Lion" pupils from Van Dyke's Taxidermy. The glass pupils were set into resin by Dods.

Strange Tangents

(continued from page 21)

recommends the book. He has for the last two years attended special effects seminars in London at the Pinewood Studios. The seminars are sponsored by the British Kinematograph Sound and Television Society (BKSTS). Mark was

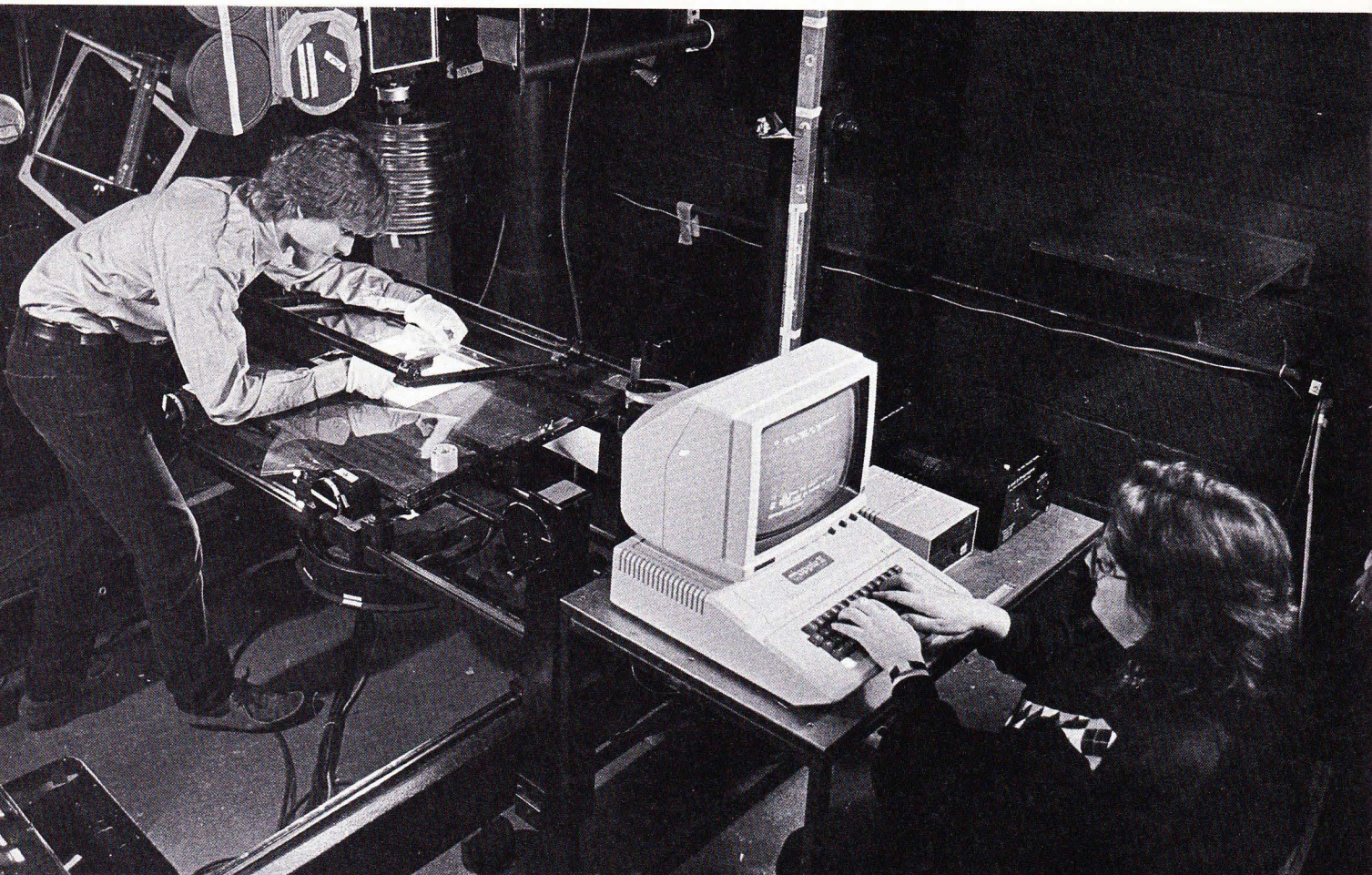
one of four Americans who attended last year's seminar. The speakers included Ray Harryhausen, Richard Edlund, Gary Kurtz, Derek Meddings and several other top-name special effects artists.

"I hope to found an international society for special effects professionals," Chorvinsky concludes. "I hope to get some interplay going between effects professionals around the world and

perhaps put out a highly-technical journal to keep members up-to-date on the latest high-tech techniques. And, of course, continue my own films."

The subject may not always be black magic and the occult in Chorvinsky's future films, but whatever topic they choose to tackle, Mark Chorvinsky and his associates are all special effects wizards.

CM



Chorvinsky Studios has its own computer-assisted animation stand. All the opticals for *Strange Tangents* were done in-house.



Foam latex appliances being readied for the "master melt" sequence.



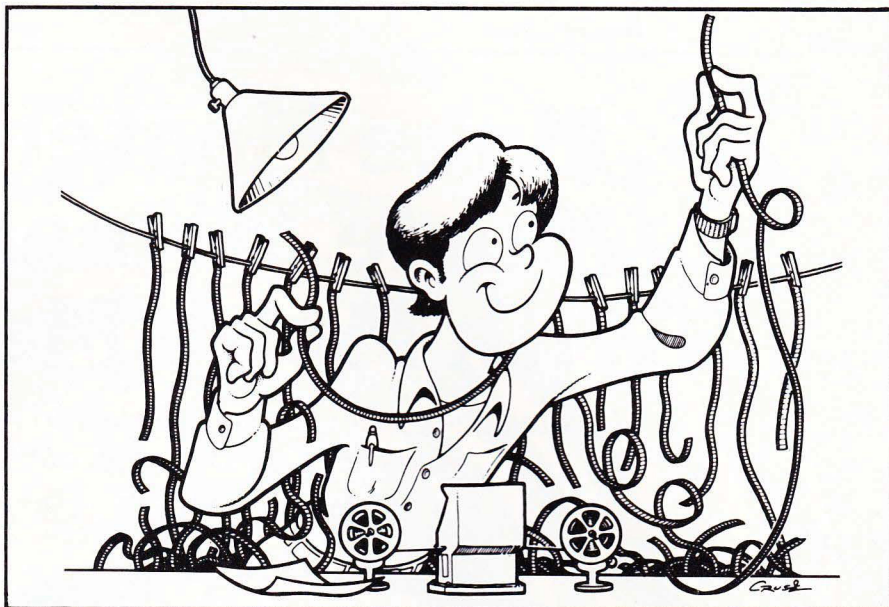
The live-action crew readies a shot for *Strange Tangents*.

FESTIVAL NEWS

Short Film Search

The deadline for the seventh annual CINEMAGIC Short Film Search is only a few weeks away. Entries must be post marked by October 1 to be considered eligible for this year's contest. Entry forms and contest rules are available for the asking. Send a self-addressed, stamped envelope to: CINEMAGIC Rules, 475 Park Avenue South, NY, NY 10016. This year's award ceremony will be a special event staged in Los Angeles. The event will be part of the STARLOG Fantasy Festival to be held at the Ambassador Hotel, 3400 Wilshire Blvd., on Saturday November 23. All winning entries will be screened, trophies will be presented and there will be a reception afterwards for winners and celebrities.

The STARLOG Fantasy Festival covers two days, November 23 and 24. The theme of this special weekend will be "The Magic of Filmmaking." Much of the programming will be devoted to panels, films, slide shows, guests and demonstrations on the subject of filmmaking—both amateur and professional. In addition, there will be a major emphasis on horror films and on filmmaking subjects to do with horror movies. Tickets are



ART: HOWARD CRUSE

available from Creation Conventions, P.O. Box 7155, Garden City, New York 11530,

and from all Los Angeles-based Ticketron outlets.

Hollywood On Tour

"Hollywood: Legend and Reality," a major travelling exhibition, exploring the growth of movie making from its beginnings in 1910, will begin a two-year, six-city tour of the United States in March 1986.

Through more than 450 example of art-work, photographs, sketches, models, costumes and cinema equipment, "Hollywood: Legend and Reality" will contrast the legends, myths and glamorous images created by the American cinema with the realities of an industry developed upon the manufacture of illusions.

Among the objects displayed will be

costumes worn by Hollywood luminaries Valentino, Garbo and Marilyn Monroe; art-works by Red Grooms, Edward Hopper, Salvador Dali, Robert Rauschenberg and Andy Warhol; special-effects models from such recent films as *Star Wars*, *Ghostbusters* and *Close Encounters of the Third Kind*; and documents and artifacts illustrating the production of the film classic, *Gone with the Wind*. Video monitors in the exhibition will show scenes from these and other classic and modern Hollywood movies.

Following its Washington showing, the exhibition will travel to the Cooper-Hewitt Museum, the Smithsonian Institution's National Museum of Design in New York City

(August 5, 1986-October 12, 1986); the Center for the Fine Arts in Miami (November 29, 1986-February 15, 1987); the Cincinnati Art Museum (April 13, 1987-June 23, 1987); The Denver Art Museum (August 19, 1987-October 25, 1987); and the Natural History Museum of Los Angeles County (December 5, 1987-February 22, 1988), where it will conclude its American tour.

Organized and circulated by the Smithsonian Institution Travelling Exhibition Service (SITES), the exhibition is made possible by the generous support of Time Inc. It will open at the Smithsonian's National Museum of American History in Washington, D.C. on March 24 and remain through June 10, 1986.

Film Festival Guide January Deadlines

Ann Arbor 8mm Film Festival

AAFF
P.O. Box 7571
Ann Arbor, Michigan 48107
(313) 769-7787
Eligibility: Open to any Independent Filmmaker.
Awards: Cash awards totalling \$2500. Keith Clark Memorial Award (\$100)
Month Held: February
Location: Ann Arbor
Date Established: 1970
Deadline: January
Gauge of Film: Super-8, 8mm
Fees: \$15
Length: No Restrictions

Independent Filmmakers Exposition

BACA
200 Eastern Parkway
Brooklyn, NY 11238 (212) 783-3077
Month Held: Varies
Location: Varies

American Film Festival

Educational Film Library Ass.
45 John Street
New York, NY 10038
(212) 227-5598
Eligibility: Non-theatrical films for use in libraries, schools, museums, and other community programs.
Month Held: February
Location: New York City
Deadline: January
Gauge of Film: All gauges transferred to video.

Quebec International Super-8 Film Festival

L'Association Pour Le Jeune Cinema
4545 Ave Pierre du Coubertin
C.P. 1000, Succ M
Montreal H1Z3R2
Location: Quebec City
Deadline: January 10, 1986
Gauge of Film: Super 8

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Required by 49 U.S.C. 3685)			
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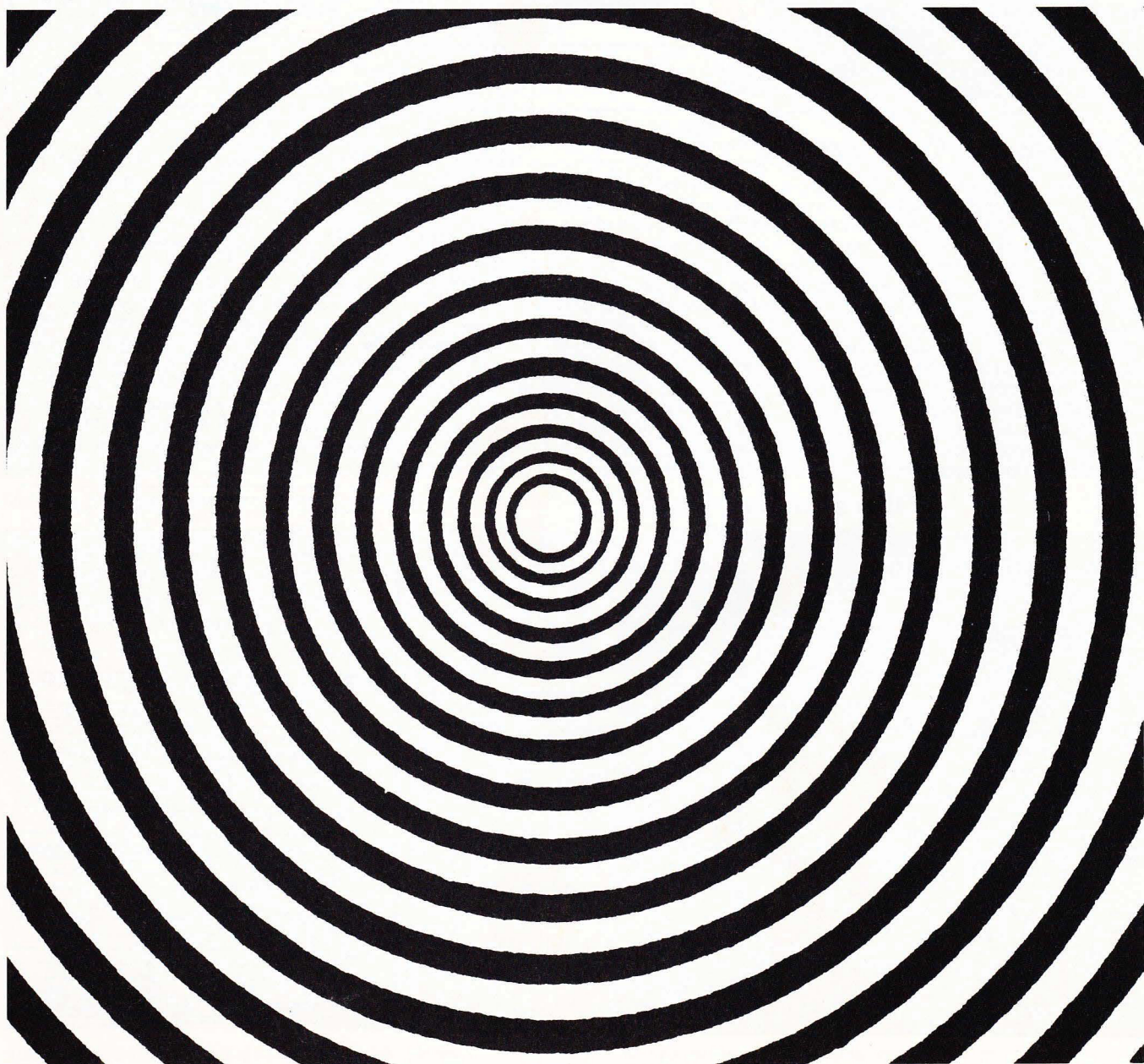
Easy **EFFECTS**

Make Masterful Movie Moments With Moire Magic!

*Create eye-straining moire effects and make your
audiences' eyeballs pop out!*

By JACK IMES, Jr.

FIGURE 1



ART: JACK IMES, JR.



FIGURE 2

If you need a quick and easy visual to back up a title, then here's an answer: *moiré pattern sheets*. Moiré (pronounced mo-ray) effects are strong line patterns produced when two or more sheets of regular line patterns are superimposed. For example, Figure 1 shows a sheet with a regular line pattern of concentric circles. When two such images are printed one on top of the other, but slightly offset, an optical illusion of dark moiré

lines appear. Figure 2 shows the moiré effect. The principle is an old one, but still quite magical. You can use these amazing patterns to create your own brand of visual effects for almost any type of film.

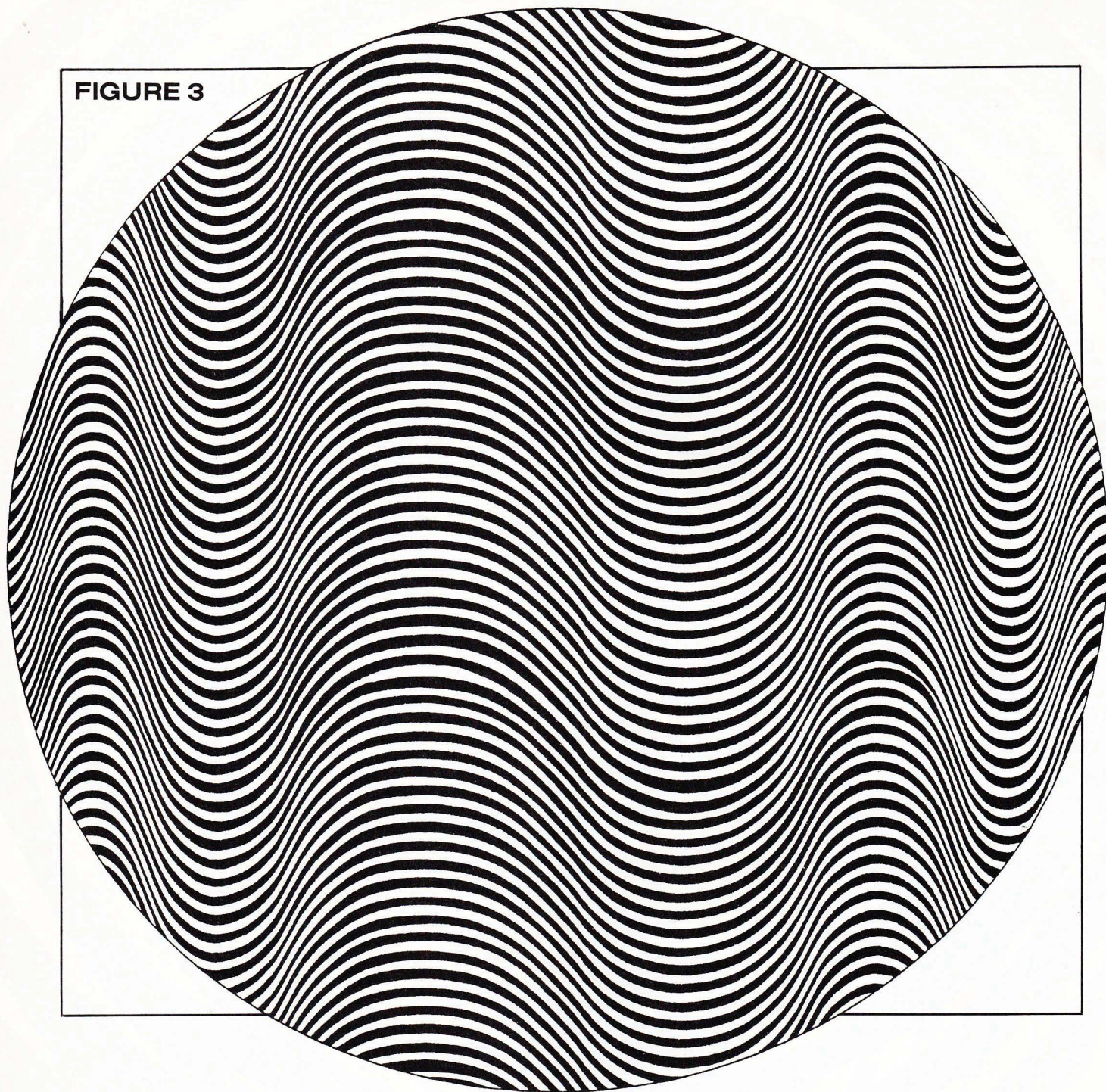
Moiré Sheets and Overlays

Step 1: Figure 3 is a sample pattern sheet that gives you a "hands-on" example for use in creating moiré effects. Take the page to a low-cost "instant printer"

and photocopy the pattern onto a stiff card or index paper stock. White is best, but you may as well make a few copies on color stock for later use. Bright red and yellow will offer excellent contrast to the bold black lines of the design.

The sample pattern sheet is only one type of possible design. You can easily devise alternate patterns and draw them on stiff paper with pen and ink. The idea is to draw many narrow lines in a regular pat-

FIGURE 3



**ROBERT "Psycho" BLOCH
and
TOBE "Chainsaw" HOOPER**

... just two celebrities who will be at
FANGORIA "Weekend of Horrors" Los Angeles
November 23, 24, 1985 Ambassador Hotel, 3400 Wilshire Blvd.
Featuring: The Magic of Filmmaking.

TICKETS: Ticketron, at the door, or mail \$10.50 per person
daily to Fangoria Weekend, Box 7155, Garden City, NY 11530

tern. Straight lines, zig-zags, or concentric circles all work well for moiré effects.

Step 2: Have the printer make a good *transparency* copy of Figure 3. A transparency has the design on a sheet of clear plastic instead of paper. Many copy machines will make copies directly onto clear acetate as well as paper. Try color copiers to create color moiré line effects. Most printers make them for teachers to use on overhead projectors and they should also be the same size as the paper pattern original. If you can't get a transparency photocopy, take the original to a regular full-service printer and have a

negative shot on hi-contrast graphic arts film (100% size) for about four dollars.

Moire Magic

Step 1: When you overlap the transparency pattern over the paper photocopy you will immediately see many moire patterns. Varied patterns will form, but Figures 4 and 5 show two possible results.

Step 2: Slide the upper sheet up and down. This creates a display of shifting moire lines. You can also slide the upper sheet in a small circular path to generate a wavy, liquid effect. Another trick is to

RICK "Greystoke" BAKER and DICK "Gremlins" MILLER

... just two celebrities who will be at
FANGORIA "Weekend of Horrors" Los Angeles
November 23, 24, 1985 Ambassador Hotel, 3400 Wilshire Blvd.
Featuring: The Magic of Filmmaking.

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FIGURE 4

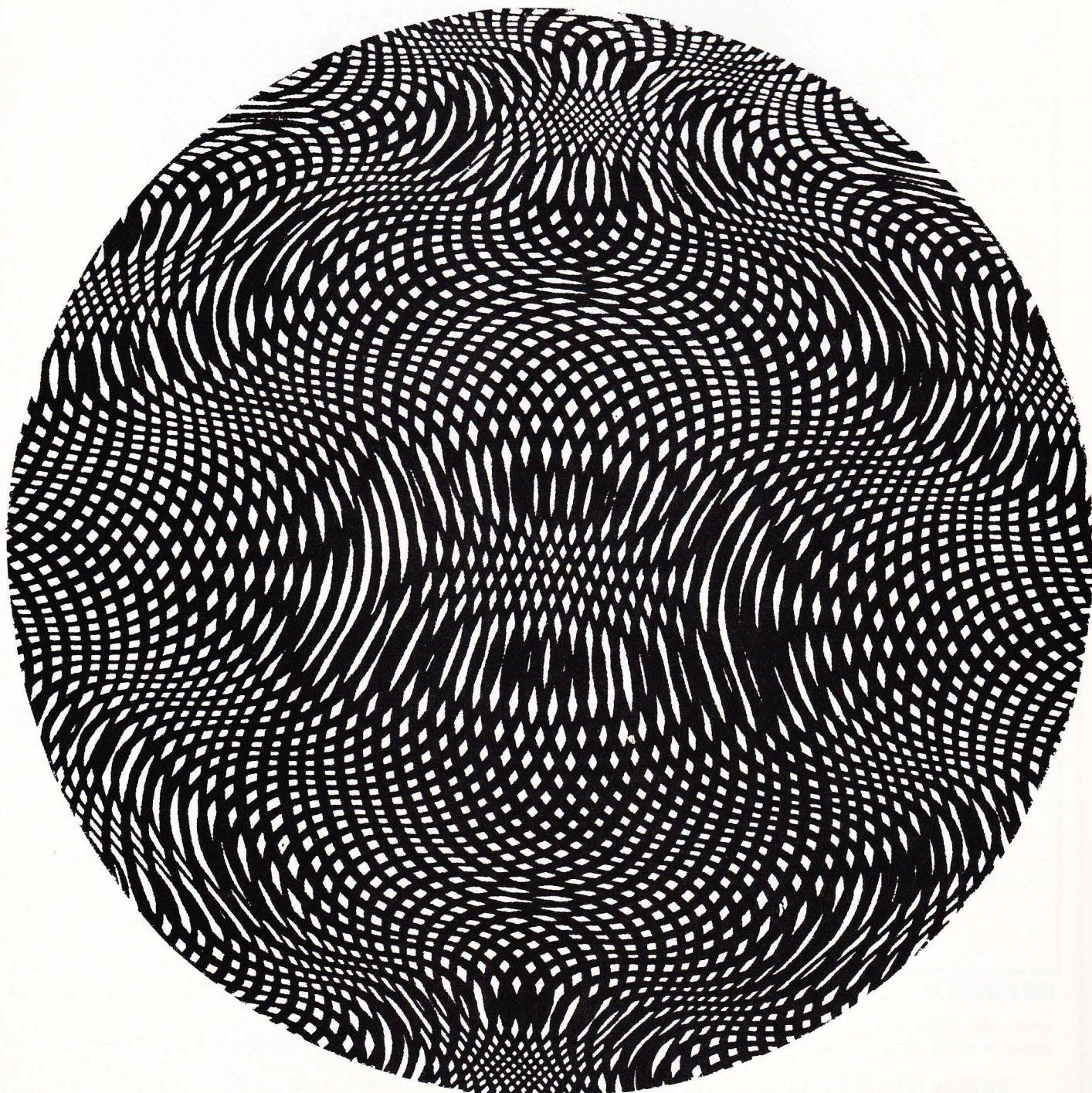


FIGURE 5

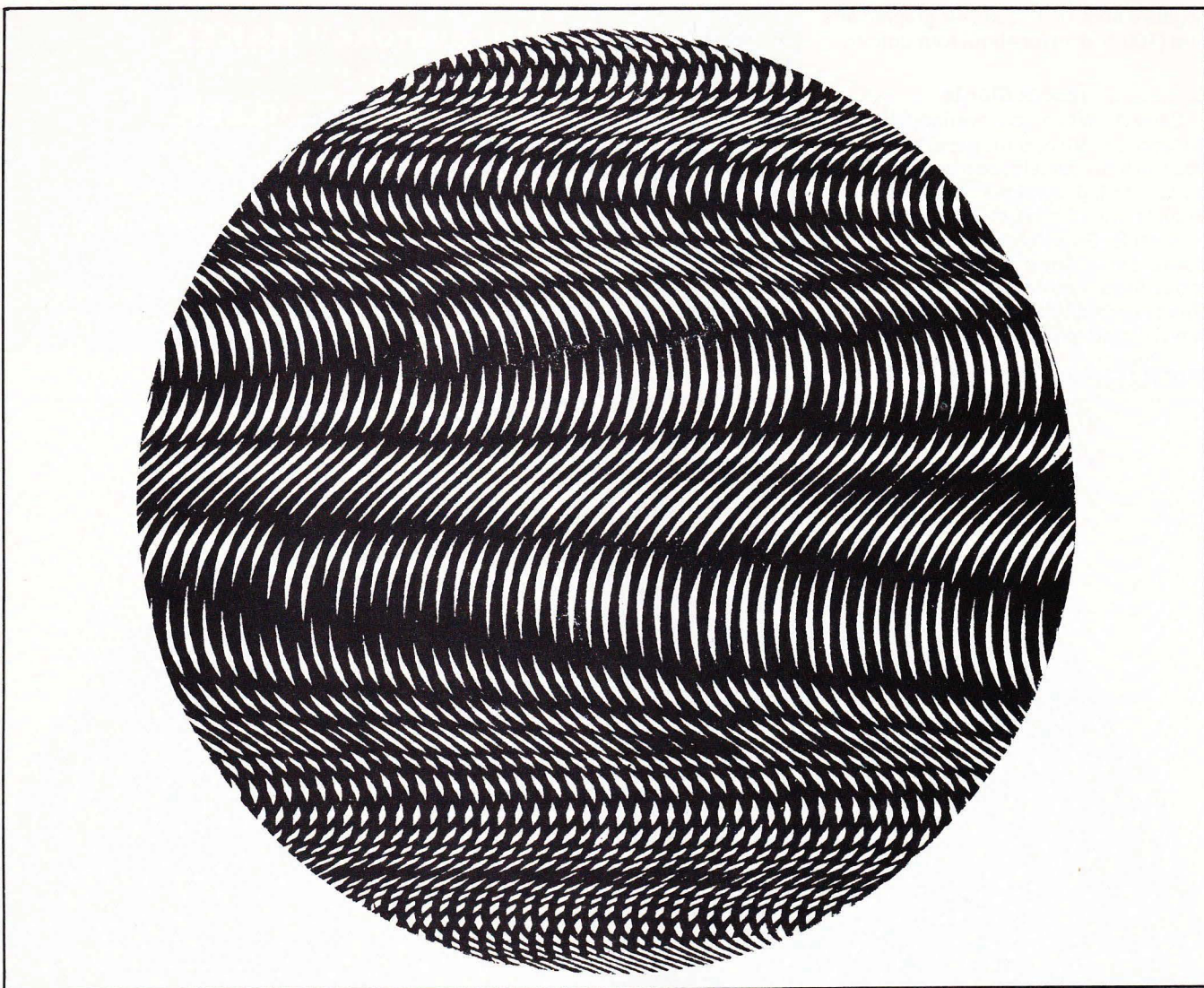


FIGURE 6

rotate the entire sheet continuously to make a more complex moiré pattern.

Putting it on the Screen

The simplest way to use the moiré effect is to photograph it as a background to

a title. You can make a title sheet with dry transfer letters. The letters are applied to a sheet of clear plastic such as a report cover. Center the title sheet on top of the upper moiré pattern sheet. With the camera on a sturdy tripod, frame the title

in the camera viewfinder to make sure the title is properly centered. Then gently move (or have an assistant move) the bottom paper sheet. The moiré patterns will seem to swirl around your title like a living background.

Figure 6 offers a different approach. The title sheet has a cut-out area, the title itself printed on stiff opaque paper. The moiré sheets can be positioned and moved behind the cut-out figure area to create an "energy" image.

Combination methods are possible, including cut-out letters and double-exposures of different color line effects. You can also backlight the moiré display, but be careful to balance the top lighting to avoid underexposure of the title against the bright display. Another use of simple moiré displays is creating unusual screens for computer read-outs and alien console displays in full-size sets. You might want to use a clock motor or some other type of slow turning motor to turn the paper disk in such props.

With a bit of thought, moiré patterns can be applied to many different visual problems. They can even be used as lighting masks to create unworldly, moving shadows.

CM



THE BLOOD BOUTIQUE



Amateur filmmakers, makeup beginners and Halloweeners have all asked us the same question—"but where do I get it?"

Professional quality makeup supplies can be purchased at your local drug-store, but there are certain specialty items that can be hard to find. The Blood Boutique is designed to solve that particular problem. We hope to present some basic information on the use of these materials in a future issue of FANGORIA. Current and back issues of CINEMAGIC also offer detailed makeup information, as does the Theater Arts section of your local library.

We welcome your comments and suggestions for the possible improvement of this service.

Stein's Professional Makeup Supplies

Stein's—now in business for close to a century—is one of the makeup brands most frequently recommended in Dick Smith's *Do It Yourself Monster Makeup Handbook*.

Derma Wax ("mortician's wax")

Distort yourself with bumps, scars, warts, etc. Soft, easily sculpted, self-adhering. Available in light or dark flesh, or neutral color.

Specify Color

Item A 1.75 oz, \$3.25
8 oz, \$7.50
1 lb, \$14.00

Nose Putty

Harder consistency than Derma Wax, can be combined with DW to any consistency between the two.

Item B per stick, \$3.25

Makeup Pencil Sharpener Item C \$1.25

Black-Out Wax

Look, Ma! No Teeth! Specially formulated for use in the mouth.

Item D \$1.25

MEHRON Brand Collodion

Both rigid and flexible collodion contain acetone, and should not be used on exceptionally sensitive skin, and never near the eyes.

Rigid Collodion—when brushed on skin, dries to a scarred appearance. Can be shaped or removed with an acetone solution (for instance, most nail polish removers).

Flexible Collodion—used to put a sealing "skin" over latex, wax, or putty.

Item I—Rigid

Item J—Flexible 1 oz, \$2.75

KRYOLAN Imported Blood Specialties

Home-made Karo syrup & food coloring are fine for most bloody purposes. However, the following items are perfect for those special occasions.

Blood For Formal Wear

All good stage blood has the sheen, consistency and color of the real thing; but this formula is the only one we know of that will not stain most fabrics! Be sure to test it first though! Not to be used in the mouth. Item K ½ oz., \$2.50

Blood Capsules

These gelatin capsules contain a special blood powder. Bite into 'em—they mix with saliva to produce plenty of you-know-what. They taste good, too!

Item L 4 caps, \$1.80

THE BOB KELLY MAKEUP KIT

A complete starter's kit for stage, film or Halloween makeups. Includes creme foundations, shadow, cosmetic brushes, latex, pencils, putty-wax, powder, stipple-sponge and more! Item M \$46.00

Liquid Latex

Dries to solid rubber, used for making bald caps, reusable scars, slush-molded masks & prosthetics. Also used as substitute for spirit gum.

Item E 1 oz, w. brush, \$3.25
16 oz, \$21.00

Spirit Gum

Used to attach prosthetics, scars, crepe hair, etc. Removes with spirit gum remover. Applicator brush included.

Item F 1 oz, \$3.25

Makeup Pencils

Hard to find colors, each 7" long. Specify color: Gash Red, Vein Blue, Jaundiced Yellow, Silverized Green, Silverized Violet.

Item G Specify Color \$1.25

Spirit Gum Remover

Item H 4 oz, \$4.25



This could be you! Send us your B & W makeup photo and list of materials used. If we print it, you win a coupon worth 40% DISCOUNT on your next Blood Boutique order!

Disguise Stix

Soap-based makeup for face and body—wears comfortably, does not brush off easily, but washes off completely with water! The wide variety of available colors can be mixed to any desired shade, on palette or on skin. White, Black, Grey, Yellow, Blue, Purple, Pink, Gold, Silver, Devil Red, Cherry Red, Cardinal Red, Crypt Green, Martian Green, Pumpkin Orange, Fire Orange, Polynesian Brown, African Brown.

Specify Color Item N \$2.00 ea.

ZAUDER's Crepe Hair

1 foot of braided "hair" unravels to produce mounds of wild, unruly hair; or straighten it by wetting and stretching it. In White, Dk Brown, Med Brown, Lt Brown, Dk Grey, Med Grey, Lt Grey, Lt Blonde, Dk Auburn, Lt Auburn, Orange Red, Bright Red, Bright Green. Specify Color Item O \$1.75

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Producers'

BULLETIN BOARD

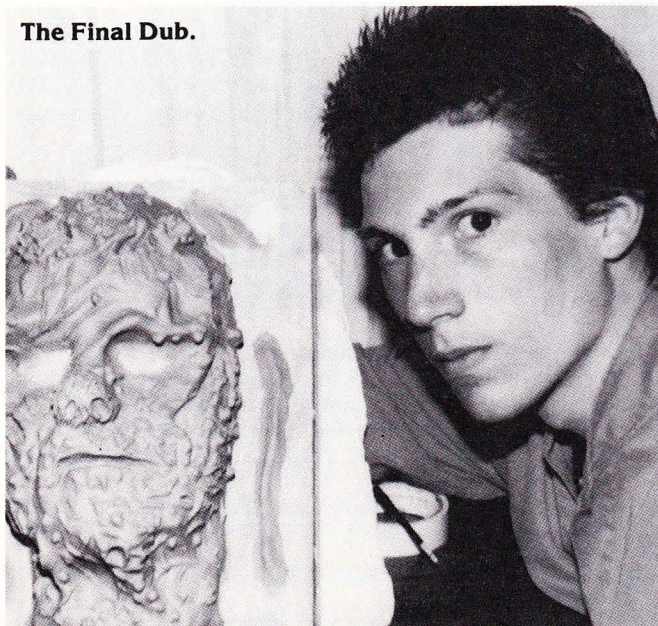
Please forward announcements of film projects in current production or near completion to Producers' Bulletin Board, c/o CINEMAGIC, 475 Park Avenue South, New York, NY 10016. Please include a photograph of some phase of the production if possible.

Thaumaturgy. A nightmare on film. An abstract and surrealistic story depicting a terrifying horror that invades a European village. Producer/Director/Writer/Cameraman: Mark Szymanowski. FX include: Rear and front projection, cel animation, stop motion, cable-controlled demons, assorted makeup effects featuring an air-bladder controlled transformation of a man into a demon, and matte paintings. Super-8, sound, color. Running time: 45 minutes. (Mayhem Films, c/o Mark Szymanowski, 220 E. Prairie Ronde St., Dowagiac, MI 49047.)

Hitler's Third Reich: A Portrait in Evil. This film begins in 1939 and works its way up to 1945. It follows the campaigns of Hitler himself, the rise and fall of Himmler, and the Africa take-over commanded by Rommel. All the main characters do eventually die and it is very accurate. Director: Danny Rodriguez. Producer: Greg LaFollette. Executive Producer: Leo Casas. Writer: Danny Rodriguez & Greg LaFollette. Cast: Hector Luna, Samantha Lucas, Greg LaFollette, Lillian Lloyd, and Paul Blaum. FX include: Actual films of World War II, mattes, models, bullet wounds, burn wounds, etc. Video tape with sound. Running time: About two and a half hours. (Rodriguezfilm Pictures (RFP), c/o Danny Rodriguez, 261 Jamul Ave., Chula Vista, CA 92011.)

The Hallucination Examination. In the middle of a good night's sleep a boy is awakened for an exam on life and death. Producer/Director/Writer/FX: Art McAlpin. Cast: B.J. McAlpin, Angelia McAlpin and Lori Craft. FX include: light saber and slow-motion effects. 16 mm, color (transferred to VHS video with a musical soundtrack.) (Art McAlpin, c/o A/M Productions, RT 4 Box 234, Magee, MS 39111.)

The Final Dub.



Thaumaturgy.



Welcome to the Reel World. A slapstick comedy in the style of Laurel and Hardy about an idiotic college freshman who makes his first Super-8 film as a project for an "Intro to Film Production" course. Although he is eager to make "The Adventures of Super-8 Man," a sci-fi film filled with special effects; he realizes it is not as easy as it looks. Director/Editor/Writer: Jon Teboe. Additional humorous material by Glen Teboe. Cast: Glenn Teboe, Rene Teboe, and Professor George Capewell. Super-8, color. Running time: 8 minutes. (Entertainment Enterprises, c/o Jon Teboe, 11805 S.W. 102 Ave., Miami, FL 33176.)

The American Sports Person. A satire adapted from a homespun story "Stalking the Wily Plymouth." The movie mimics the TV series *The American Sportsman* following the hunt for a plymouth road runner car. Producer/Director: Steve Hoesser. Cast: Byron Meyers, Terry Taylor, Charles Fisher. FX include: Stop motion, miniatures, explosion. Super-8, color, sound. Running time: about seven minutes. (S. Hoesser Film, 3505 Arthur MacArthur Rd., San Pedro, CA 90731.)

The Final Dub. A young filmmaker struggles to complete a short, horror video film. Something strange happens, and no one wants to be in the final cut. Producer/Director/Special Makeup FX: Mark L. Pederson. Cast: Shane Satler, Mike Koppelman, Tanya Walsh, Kurt Koppelman, Craig Cull. FX include: foam latex appliances, decapitation, stop-motion animation, blood & gore, filter/light FX, digital-delay voice alteration. Theme and underscoring: composed and performed by Mike Koppelman. Super-8, color, two-track sound. Running time: 13 minutes. (Mark L. Pederson, 2118 Chestnut St., Grand Forks, ND 58201)

Ridgewood Encounter. An ordinary film is interrupted by a special bulletin showing numerous UFO sightings around the world. After several commercials and more bulletins, we are taken to the landing site—a junior high school athletic field—for more extensive coverage. An enormous spaceship with flashing lights dwarfs the school building and comes in for a landing. In an exclusive interview, the alien visitor gives us his message for the world: "All you need is love," Producer: Ridgewood Spectacular Productions. Director/Writer: Donald T. Curran. FX/Sound: Jose Negron. Makeup: Freddy Carradero. Cast: Edward Trimmer, Vinnie Manfre, Joe Sicillia, Michelle Jones. FX include: laser blasts, matte shots, makeup, sound effects, animated glass matte shot. Super-8, color, sound. Running time: 15 minutes. (Ridgewood Junior High School, 66-56 Forest Ave., Ridgewood, NY 11385.)



Hialeah Vice. A spin-off of the series *Miami Vice*. A young vice team is after a notorious crime lord who seems to have an escape from every struggle! Director: Jose Menendez. Cast: Alex Barreto and Juan Menendez. FX include: Puppetry, bullet explosions, stabs and puppet stunts. Super-8, color, music on separate cassette. Running time: 10 minutes. (Aljogui Productions, c/o Jose Menendez, 980 W. 77th St., Apt. H, Hialeah, FL 33014.)

Canines. Light comedy/horror. Two friends go south to visit an old high school buddy near a lake, but all they find is a note saying "I'll be back tomorrow." They go fishing, not knowing that their friend was actually killed by large mutant wolves. That night one of the friends gets killed. The last one runs with terror into an abandoned camper and finds a gun with six shots, but he doesn't know how many wolves are out there. Who will survive? Cast: George Pecenica, Ray Volk, and Todd Gyure. FX include: full-size mechanical wolf, blood effects, sound effects. Super-8, color, sound. Running time: 9-10 minutes. (Fireside Films, c/o Michael J. Rigg, 1319 W. Glen Park Ave. #D, Griffith, IN, 46319.)

Making Canines. Comedy/documentary/spoof. The making of *Canines* with one exception: Most of the film is a trailer (advertisement) for FF's next film—*2000 None: A Space Parody*, already in production. Super-8, color, sound. Running time: 5 minutes. (Fireside Films, c/o Michael J. Rigg, 1319 W. Glen Park Ave. #D, Griffith, IN, 46319.)

CM



BOOKS

ASC Authors

At a recent special Author's Open House at the offices of the American Society of Cinematographers, three member-authors were on hand to meet their readers and autograph copies of their books. Pictured are Linwood C. Dunn—author of *The ASC Treasury of Visual Effects* at top left; L.B. "Bill" Abbott—author of *Special Effects: Wire, Tape and Rubber Band Style*; and at bottom left are Juanita Walker and Joseph Walker, authors of *The Light on Her Face*.

Together these three books form the cornerstone of any basic special effects and filmmaking library. *The ASC Treasury of Visual Effects* is a comprehensive volume which traces the history of special effects. Conceived and supervised by Academy Award winner and two-time president of the Society, Dunn worked with designer and editor George Turner to collect articles written by various members of the ASC, all leading directors of photography specializing in effects work. Included are articles by L.B. Abbott, Howard Anderson, Art Cruickshank, Linwood Dunn, Richard Edlund, Frank Van der Veer, Harold Wellman, Joseph Westheimer, and Albert Whitlock.

Hundreds of rare photos illustrate a volume that discusses effects from the turn of the century through *Star Wars*.

Oscar and Emmy-winning cinematographer L.B. Abbott introduces his book *Special Effects: Wire, Tape and Rubber Band Style* with a chapter devoted to a survey of basic special effects systems from rear projection through miniatures and traveling mattes. Basic principles are discussed and clearly illustrated before turning to detailed discussions of such films *Cleopatra*, *Fantastic Voyage* and *Journey to the Center of the Earth*. For many years Abbott was head of

special visual effects for 20th Century Fox and he speaks with the certain authority of first hand knowledge. The volume is extensively illustrated with many color frame blowups of effects sequences.

The personal memoirs of Joseph Walker in *The Light on Her Face* are a virtual history of motion picture photography since the days of hand cranked cameras. Written with his wife, Juanita Walker, the book is illustrated with 50 years of rare photos. Walker was recently honored for his many contributions to film art and technology among which is his invention of the motion picture and television zoom lens.

All books are available from The American Cinematographer, P.O. Box 2230, Hollywood, CA 90078.

PUBLISHER'S ANNOUNCEMENTS

Technique of Special Effects Cinematography, fourth edition, by Raymond Fielding. Fully updated to include new material on front projection and traveling matte techniques, as well as new information on the use of computers and motion-control systems, this book by Ray Fielding remains the most sought-after guide in print about professional visual-effects. The fourth edition contains over 130 new illustrations, many in color. Nearly every chapter has been reworked to reflect the latest technical methods concerning this aspect of the industry.

Fielding assisted Francis Ford Coppola in setting up Zoetrope Images and currently teaches filmmaking at the University of Houston. His experience and expertise in the growing area of special effects cinematography make this edition a major

source of ideas and information for producers, directors, technicians, and writers. For the cinematographer, this book is an indispensable reference that can be relied upon for finding the techniques that will lead to new and better visual effects.

Published by Focal Press, the book is scheduled for September, 1985. This 448 page (estimated) hardcover book is currently available at the pre-publication price of \$34.95 from Focal Press, 80 Montvale Ave., Stoneham, MA 02180. CINEMAGIC will publish a review of the book in our next issue.

Technique of the Professional Makeup Artist

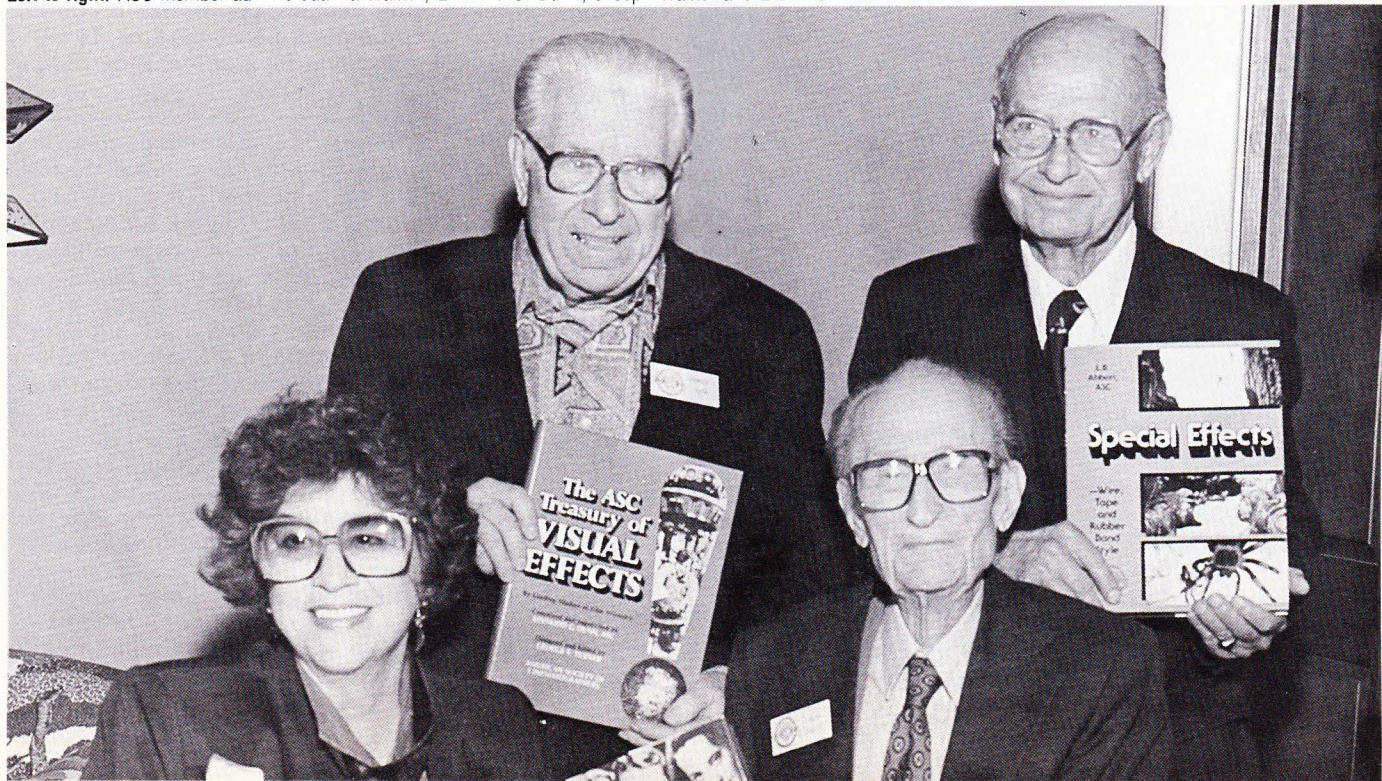
by Vincent J-R Kehoe. Gifted makeup artist Vincent Kehoe has been one of the leading professionals in this field for nearly 30 years. His new work is twice the book of any other on the subject. In terms of comprehensive scope, authoritative information, and illustrative detail, this book will be the most vital and important resource available to practitioners of the specialty.

Along with the hundreds of techniques and methods addressed, this volume gives a complete overview of makeup and its role in the performing arts. Particular products and suppliers are covered, as well as such topics as planning a job, working with clients, and the artist's responsibilities on the set. This unusual and exceptional book will enhance the skills of all those involved in makeup for film, TV or stage.

This book is scheduled for October, 1985. It is available in hardcover, 480 pages (estimated) at the pre-publication price of \$59.95 from Focal Press, 80 Montvale Avenue, Stoneham, MA 02180. Look for a review in a forthcoming issue of CINEMAGIC.

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Left to right: ASC member-authors Juanita Walker, Linwood C. Dunn, Joseph Walker and L.B. "Bill" Abbott.



BEHOLD . . .



His Mighty Hand

How the Paramount special effects team parted the Red Sea, in VistaVision and blazing Technicolor

By PAUL MANDELL

Director Martin Scorsese described it best when he called *The Ten Commandments* one of his guilty pleasures. "I like DeMille, his images, his theatricality. Forget the script—you've got to concentrate on the special effects, the texture, the color. The Angel of Death killing the firstborn in green smoke. The Red Sea, the lamb's blood of the Passover, the parting of the waters. DeMille put a dreamlike quality on film that was so real, it excited me as a child and stuck with me for life."

Whether you can identify with Scorsese or not, one thing figures: Cecil B. DeMille's color version of *The Ten Commandments* is still one of the great effects pictures of all time, and the parting of the Red Sea continues to reign as the most spectacular scene ever filmed. Using the Paramount effects team spearheaded by John Fulton, ASC, DeMille put on the screen a complete encyclopedia of visual magic.

The film is a whopping example of the state of the art in the fifties. Dialogue rigid

and ponderous? You bet. But its use of blue screen opticals, miniatures, and matte paintings in concert with unusual color schemes is captivating, and the Red Sea sequence is a blatant jigsaw puzzle of shots and techniques. To this day, Paramount still tries to keep its "secrets" under wraps, as though revealing them were tantamount to unraveling the Dead Sea Scrolls.

DeMille had the guts to part the Red Sea twice in his career. Back in 1923, he had Fred Moran and Roy Pomeroy, then head



DeMille's encampment (seen below) has been replaced with the Red Sea. Horizon and cloud effects were added in miniature.

The location encampment on the Sinai Peninsula. Large rock formation set pieces were built to mask split-screening of approaching chariots. The array of tents and truck caravans are DeMille's location offices, dressing rooms and logistical support. This was well before the days of air-conditioned mobile trailers.

of the studio's "technical" department, dump gallons of water down both sides of a U-shaped trough. When the film recording this was run in reverse, the effect was that of a body of water splitting apart. The separated walls of the Red Sea, somewhat less miraculous looking, were actually two banks of quivering gelatin. Pomeroy set up a large mold of it on a table, divided it down the middle, and matted in a shot of actors filmed in Guadaloupe. Water and glycerin ran down the gelatin to give it some life. For the engulfment, the water shot was simply run forward and superimposed over the people. Submerged dummies were photographed through the wall of a glass tank.

The sequence didn't look bad at all, but DeMille had something more realistic in mind when he started preparing his second version of *The Ten Commandments*. While directing *The Greatest Show on Earth*, he locked in Charlton Heston to play the part of Moses, and Wally Westmore began sketching Heston's face for 10 incredible makeups.

In 1953, John Fulton was hired to head Paramount's effects department after the sudden death of Gordon Jennings. His immediate concern was the parting of the Sea, since the picture was already well into pre-production. He knew it would be a



PHOTO: PAUL MANDELL ARCHIVES

water effect in miniature, but no specific method had been devised.

Just how do you create two massive walls of water flowing upward in miniature, without belying it as such? Creating this miracle would be no piece of cake, and no slab of Jello. The obvious notion (one that is still viewer-perpetuated) of filming a long miniature waterfall, flopping that image, split-screening them together and reversing the action on the printer came to mind. It *could* suffice for a master shot. But how do you satisfy many different camera angles of the walls flanking the Hebrews, the pursuing chariots, and the climactic engulfment of the Egyptians?

The waterfall idea was rejected early. For one thing, water action printed in reverse runs the risk of *looking* precisely that way, and far from miraculous. Moreover, the illusion called for licks of water lashing wildly against the sky, an effect uncharacteristic of water spilling over a flat surface. Erecting a flange along the edge of the fall could cause the water to splash upward along the horizon line but would probably show through in the final image. And it could never look in scale. DeMille wanted something mammoth and unusual—not only was the parting of the Sea the film's trump card, but the key selling point for advertising.

The first experiment was actually rigged to defy gravity. On the Paramount back lot in 1953, a sloped ramp about twenty feet high, but not very long, was built under the supervision of John Fulton and Ivyl Burks. High-pressure hoses at the bottom, fed from a hydraulic pump behind the structure, caused water to gush toward and over the slope. The idea was to move the camera back, film this action in profile at different distances, and combine the images in receding perspective with soft-edge mattes. Repeating the procedure from a slightly different angle, then flopping this second composite and split-screening it with the first one provided a continuous wall of water on both sides of the frame. A dark tarp stretched behind the ramp enabled the rotoscope department to edge-matte the horizon area and black out the entire field around the walls. Added to this strip would be the live action mid-ground shot in Egypt, matte-painted rocks along the sea bed, and bluescreened foreground actors. Sky effects would be double-exposed into the black area above the water.

Unhappily, this operation failed. The walls of water looked weak and lacked the visual information required to convey a sense of enormity. The optical department had difficulty blending the individual water segments convincingly, and spray from the pressure hoses shot upward into the matte for an undesirable effect.

A partial composite made on December 2, 1953 sealed its fate. Fulton and Burks had to rethink this completely and find a way to obtain a heftier, more con-



Charlton Heston as Moses stands on a sharp crag calling on the forces of God to open an avenue of escape. Rapidly moving clouds collide as wisps are siphoned into the Sea. Britt smoke effects were "inhaled" by a vacuum source below the horizon cutout. A hand-animated matte spreads along the surface of the water combining several water images.

trollable water image.

Meanwhile, DeMille's survey party flew to Egypt and set up headquarters on the outskirts of Cairo. His principal cameraman, Loyal Griggs, scouted vistas on both sides of the Nile River, evaluating their pictorial qualities as well as their accessibility. The sites chosen were near the Red Sea, on the Sinai Peninsula, Beni Youssef, and at Mt. Sinai itself.

Mitchell Camera started building four custom VistaVision units specifically for *The Ten Commandments*, which supplanted the ones Paramount had built

earlier for a number of pictures (*White Christmas* was the first, shot by Griggs). Included were six state-of-the-art lenses (three were Leicas) ranging from 28mm to a 75mm telephoto. Some of the cameras were still being built after the picture was released. Today, they are rented from Paramount by companies like Disney and Apogee for effects work.

John Fulton joined DeMille's outpost in spring 1954 and spent six months selecting and photographing desert sites with rocky outcroppings that would accommodate water composites, miniatures,



Pharaoh's chariots race into the seabed. The water wall was filmed using the setup on page 54. The chariots are in Egypt; the rock is a matte painting; Pharaoh on the rock is bluescreened in. Optical lineup is a bit off, indicative of the rush to complete the picture.



Charlton Heston and others on a matching rock were filmed on the bluescreen stage at Paramount. A hard-edged matte was drawn to retain the base of the location rock. Julia Faye and child sitting on the ledge were filmed at Paramount; the people below them were filmed in Egypt.

matte paintings, and blue-screened stage shots. The art department supplied invaluable aid by inking the outline of the water walls on clear celluloid frames, which were placed in the finder as lineup clips. Two VistaVision cameras used for this had special lineup attachments on the eyepiece with register pins, marking off proportion and dimension. The clips also included line drawings of landscapes rendered by storyboard artists John Jensen and Albert Nozaki. This procedure was necessary, since it was impossible to find a single stretch of scenery that matched the boards.

Using these clips, strips of terrain, as far as 30 miles apart, were photographed separately and married in the finder, reducing considerable headaches for Paul Lerpae's optical department later on. The first shot of the encampment by the Red Sea, for example, as seen behind John Derek on a hilltop, consisted of a scene of

the actual Sea, a strip of Sinai desert and a studio hilltop built on Paramount's blue screen stage. More graphic was the long shot of the chariots racing toward the site of the Pillar of Fire—a complex mosaic consisting of miniature skies, a horizon strip of chariots charging downhill, another piece of desert depicting their halt (ingeniously tied together by a split-screen circumscribing a boulder built on location), and several matte-painted mountains rounding out the composition.

Fulton filmed most of the Red Sea live action himself, a rarity for a fifties department head. The chemistry between him and DeMille was something the picture really hinged on; Fulton, a generally dour, uncompromising soul, and DeMille, a hard-boiled taskmaster, trusted each other's sensibilities. During the crossing of the Sea, for example, DeMille realized that the 600 extras he had assembled would not stretch across the desert strip at Beni



Moses and a few extras were filmed separately at Paramount and matted into the Egyptian scene.

Youssef. To get the long shots, he needed 1800. Fulton suggested that the procession walk through normally and be combined into one continuous trail optically. A year later, Paul Lerpae's unit tied those shots together with hand-animated traveling split-screen mattes. Jack Caldwell and Aubrey Law composited them on the Vista-Vision printer, along with most of the trick shots in *The Ten Commandments*.

"As the people went through," Lerpae noted, "We ran a matte following them, which left that part unexposed. Then, I took the beginning of the scene and had them follow the tail end of their own group. Finally, it looked as though 1800 people were marching toward the horizon. It was one heck of a thing to do."

Several in-camera techniques were

A partial composite of the magnificent vista of the open Red Sea. Large foreground rocks are location elements, and all the people in this test frame blow-up were filmed in Egypt. The length of the caravan was multiplied optically.



employed. For scenes of ominous clouds hovering over the chariots, Fulton prepared the original photography by mounting a piece of black cardboard in front of the lens, much the way Albert Whitlock prepares his plates for original-negative matte shots. Masking off the sky area with a fringe of clearance for the live action allowed the optical staff to double in miniature skies without sacrificing another generation. Also, a special graduated neutral-density filter was devised that so effectively changed the aspect of outdoor light, few realize that the crossing of the Sea (particularly midway) was shot in bright sunlight. Similar methods followed later on the stage photography, with filters and scrims used to unite the added storm effects. Another plus was the development of a new carbon arc light that more evenly matched studio shots with location work.

Charlton Heston arrived in Egypt in October 1954 and weathered eight weeks of sweltering takes in full Moses regalia for the Exodus. "I remember clearly my first scene in which I had to climb the Sinai slope," Heston fondly winced. "God, was it hot!" Yul Brynner flew in briefly to kick off the chariot chase, which he completed in bluescreen during the seven months of stage work at Paramount.

DeMille and Heston flew back to California on Thanksgiving. Fulton and his second unit remained until Christmas to secure plenty of takes, which were refrigerated and air-freighted to Paramount almost daily.

The "new" Red Sea operation soon left the drawing board. Early in 1955, ground

was broken for a "water miniature" so large, it caused the temporary union of the RKO and Paramount backlots, with dividing fences torn down to permit camera placement from the vantage point of the adjoining studio. The engineering and labor involved was staggering, requiring more than 30,000 cubic feet of concrete.

Built on one-fifth scale, the wall-of-water image was formed on the *bottom* of a tilted ramp. The ramp stood 32 feet high and 80 feet long, adjacent to Paramount's Western street, with water supplied from an elevated tank through 15 manually-controlled, hydraulically operated slit valves. This allowed a long stretch of water to cascade down in a thin sheet, dip, then "surf up" into a turbulent mass and spill over the rim. Built over the bottom

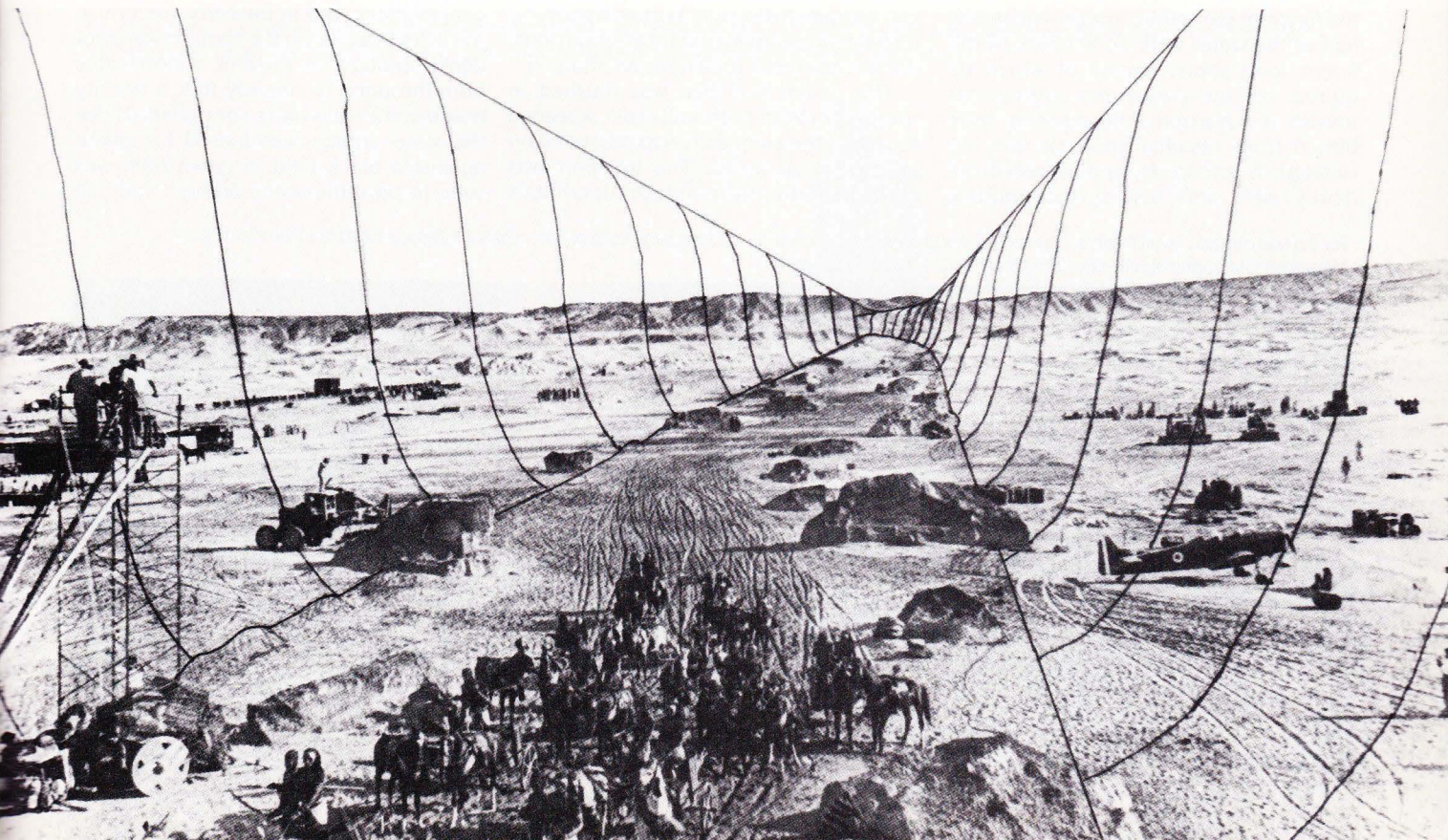
"hump" was a network of wooden riffles which helped break up the flow into thick currents. (This raised section not only served to create undertow, it helped contour the image.) The main idea—and the reason for the structure's size—was to get enough violent water action plummeting downward, and to photographically isolate the currents. Unlike the first experiment, Fulton's team now had a solid, controllable water image to deal with.

The photography of this was ingenious. A clip containing a line drawing of the water wall was placed in the finder, as was done in Egypt against the desert terrain. Taking advantage of the rectangular VistaVision frame format (which runs 8-perf horizontally across the focal plane), the camera was placed at a three-quarter

Matte paintings of rocks helped blend the desert sand with the sea walls. Note the painted section around the wagon. Smoke was roto-isolated and superimposed in the center.



In this actual location shot of the charging chariots filmed at Beni Youssef, some of the rocks are real and others were built. A line drawing was placed over the photograph to prepare it for compositing.





This is another example of tricky combination shots. The horse on the promontory is standing on a set piece that was built on Paramount's bluescreen stage. The chariots entering on the middle ground are in Egypt.

angle overlooking the span of the surf, and mounted on its *side*. By doing this, the currents were lined up vertically through the finder and matched to the reference clip, which now was also vertical. Thus, the water spilling over the rim ultimately became the *top* portion of one wall, recorded on one side of the frame. The embankment where the water "disappeared" was painted black as a fringe area for unfilmed sky effects. A wide-angle lens spread out the perspective, making it appear gigantic.

This particular setup could only capture the *forefront* part of the image—generally half of the water wall. To achieve 16 different long shots,—many of which required distant curvatures jutting out toward the horizon—the currents were filmed from peculiar spots on the lot, isolated in roscope, and jigsawed optically with soft split-screen mattes.

Angles that favored the left wall often embraced five or six blended sections, whereas the right side only needed two or three. The optical team breathed easier when the earlier plan of having to print each wall in 12 parts proved unnecessary.

"Ramp" photography started on August 5, 1955 and ended on September 9. High platforms were erected above the surf to obtain the mid-section pieces. One camera was placed on a rooftop overlooking the entire backlot, just to capture a distant piece that would figure near the horizon. A mirror on the roof enabled the cameraman to flop that section by filming its reflection with a short focal length lens. (What easier way to reverse an image?)

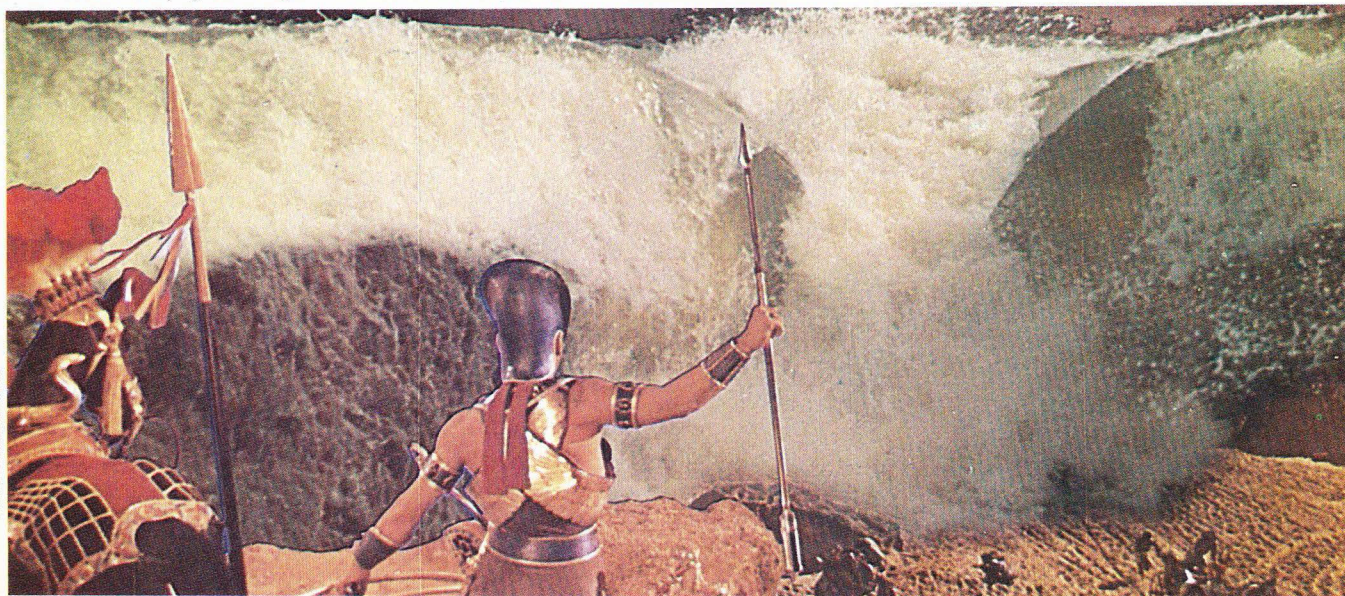
The parted Red Sea was finished in roscope. With both walls split-screened together, the composite was projected on an animation stand. The top part was edge-matted softly to reduce superfluous

splash, and the entire periphery was blacked out. The bottom portion (containing visible sections of the ramp) was roto'ed with a hard-edge matte, conforming it to the rocks on the desert strip.

"This we called our 'double dupe'," Lerpae explained. "We duped it once to jigsaw the various water pieces; now we were duping it again to add other elements."

Then a new problem arose. No traveling mattes had been planned to marry the water walls with cloud effects. It seemed simple enough to double the clouds in against black. But in the early precomps, the licks of water on the horizon were not dense enough to prevent a noticeable burn-through. To remedy this, a density matte of the walls had to be pulled. (Since the water image was biased for green against a black field, a green filter was used to print the scene on high contrast

For the final climactic engulfment, a huge curl wave was created in miniature by dumping large tanks of water against a slope at the edge of the effects tank. Meticulous roscoping of soft-edged airbrushed mattes "shaped" the wave.



black and white stock. The positive and negative of the hi-con provided a matte and counter-matte.) The result of all this duping caused the water line to bleed eerily against the sky, which (for some people) heightens the surrealism of it all.

Additional rocks were painted in by Jan Domela and composited by matte cameraman Irmin Roberts to better blend land and sea. Highlights on the walls were modulated optically, giving them their final contour. Diffusion was added to the forefront sections, probably with Vaseline on glass, to take the edge off the currents. Where it became difficult to blend the distant water sections, a layer of smoke was roto-isolated and superimposed to mist them out. This process was repeated for every long shot pictured on the storyboards.

The crossing of the Sea included scenes of the caravan walking past the blue screen stage with the water wall *behind* them. Here, the sea appeared to boil violently rather than travel upward, a curious effect that carries with it a certain logic. To secure this plate, an unmanned camera was mounted on one of two tracks that traversed the upper part of the ramp. The flanged beams extended beyond the ramp into scaffolding on both sides, enabling someone to actually slide the camera along the rail and lock it off. Shooting downward with a 75mm lens, the unmanned camera recorded only the portion of undertow bubbling up. For dramatic *tracking* shots of the water as seen behind the charging chariots, a chain drive allowed the remote operator to pull the same camera down the length of the beam on roller bearings and dolly the action.

The latter operation took place on

September 1, 1955. Actors walking across the bluescreen stage were filmed on December 15, 1955. The shots were not composited until June 1956—typical of *The Ten Commandments'* enormous catalog of held takes.

There was, of course, much more to the parting of the Red Sea than two palisades of water. The sequence required two additional water setups: the gradual buildup of turbulence as seen behind Moses on the crag, and the roll-back of a giant wave.

The churning sea was filmed high-speed in an outdoor tank rigged with

wavemakers and raked with wind machines. Behind the tank was a dark wall and a white horizon strip, permitting the cameraman to gauge how water and sky would eventually marry up.

To create the effect of a strong forward wind, this plate was ingeniously doctored. A hand-animated matte, drawn in the manner of an oil slick, allowed a separate layer of heavier water action to subtly spread toward the horizon. Foreground actors blown with wind machines performed in front of a bluescreen. The combination of these exposures in concert



PHOTO: © 1956 PARAMOUNT

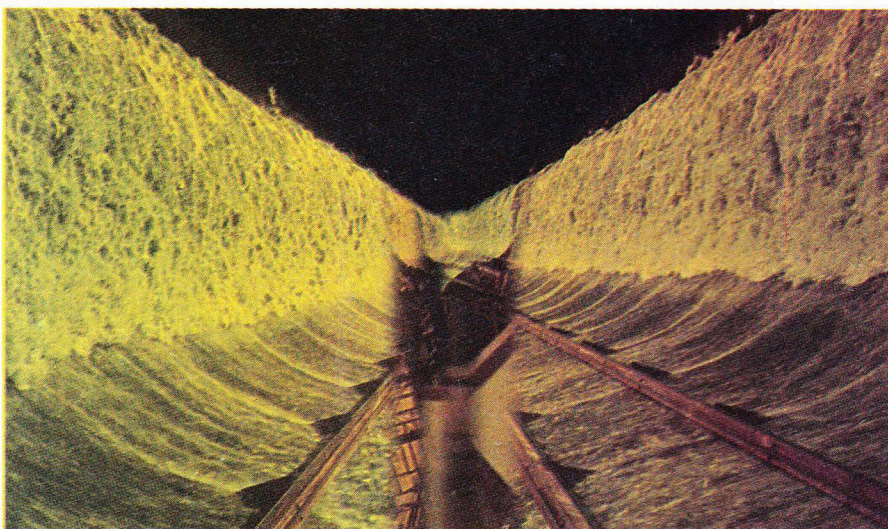
Charlton Heston as Moses watches what appears to be tons of water smashing down upon the Egyptian army. Heston and extras were filmed separately on Paramount's bluescreen stage (seen below) and combined with the multi-composited miniature water effects.



PHOTO: PAUL MANDELL ARCHIVES



A rotoscope artist isolated the wave action formed by the dump tanks (opposite page top) frame by frame, merging it with the water walls.



Six original water negatives (three for each side) were jigsawed together with soft-edged mattes to produce the water walls. A funnel of smoke was later superimposed over the horizon to disguise the splits. You can turn the photo sideways to see how the "ramp" cameraman saw it through the finder.

with the gusty sound effects, colliding storm clouds, and Charlton Heston's powerful delivery created a moment of cinema not easily forgotten.

Forming the giant wave that opened and closed the Sea was a cumbersome affair involving 24 dump tanks synchronized to mobilize 360,000 gallons of water on cue, one after another. Twelve were built on each side of another outdoor tank and dumped in succession against two sloped embankments. With water colliding in mid-air from both directions, a wave was produced capable of being maintained for the shot's duration.

A print of this was projected up in rotoscope. Then, painstakingly, a series of hand-animated mattes were made that "wiped" the wave onto a master shot of the water walls. Starting with a miniscule patch of wave positioned on the horizon, the roto mattes were inked to "spread" the wave over the Egyptian middleground and simultaneously peel off the walls. Playing the wipe in reverse opened the Sea; running it in forward mode closed it.

Creating the exact moment of the Great Divide was a matter of holding on the maelstrom created by all the released dump water, then rapidly dissolving to the *reverse-action* dump water that had been closest to the camera. The final image resembled a huge whirlpool "splitting" into two torrents and exiting at both sides of the frame. The roll-back of the matted-on wave continued the action.

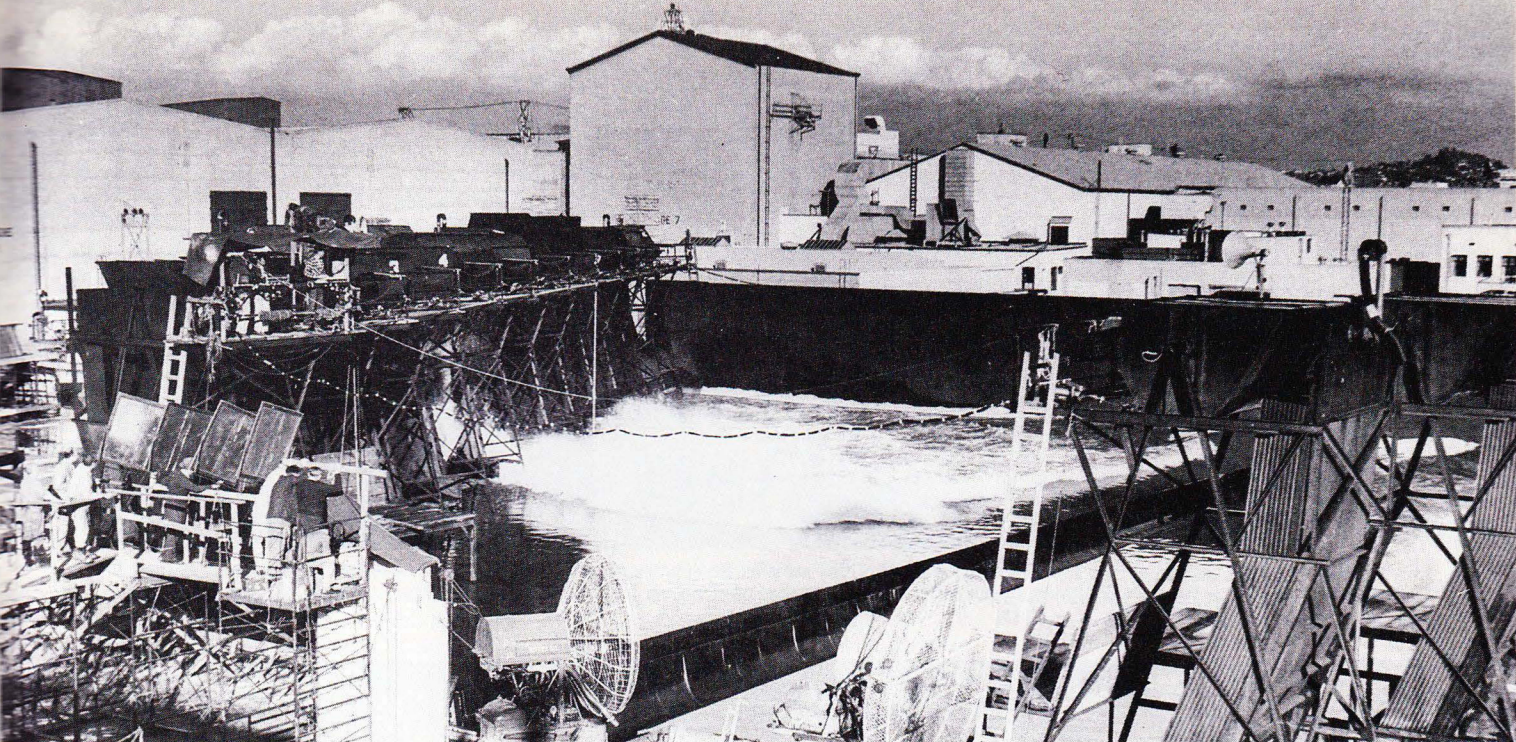
As one critic remarked—it's the ultimate party trick.

John Fulton's blue screen was the translucent type backed by a bank of lights. Despite its impressive size (25-by-75 feet), filming the actors in extreme long shot for the Divide posed an



PHOTO © 1956 PARAMOUNT

The Great Divide was created as a mosaic of over a dozen original negatives. Bluescreened actors, Egyptian desert, water walls, matte painted rocks and miniature skies were combined in the optical printer. This was the most difficult shot in the film and the most spectacular.



In early rehearsal, is the filming of the giant wave (a miniature effect) that opens the Sea. Twelve dump tanks on each side scooped up the water in succession, two at a time, hurling it in mid-air. Note the curved embankment near the wind machines which helped to form the curl of the wave. A canvas-covered camera records the action from a platform at left.

unforeseen problem. Heston stood on the prop crag. A large wind tunnel, channeling air from a fan on stage right, hung from the rafters in front of the screen (it was later garbage-matted out). A hundred extras gathered around the stage and DeMille pulled the camera as far back as it could go. Looking through the eyepiece, he realized that the shot required placement of extras beyond the parameters of the screen. To resolve this, Paul Lerpae's team had to hand-roto a moving matte around them and composite it along with

the bluescreen matte, making it *the* most time-consuming shot in the film. Thirteen original negatives were involved (over *sixty-five* strips of film counting mattes and color separations) embracing almost every kind of special effect.

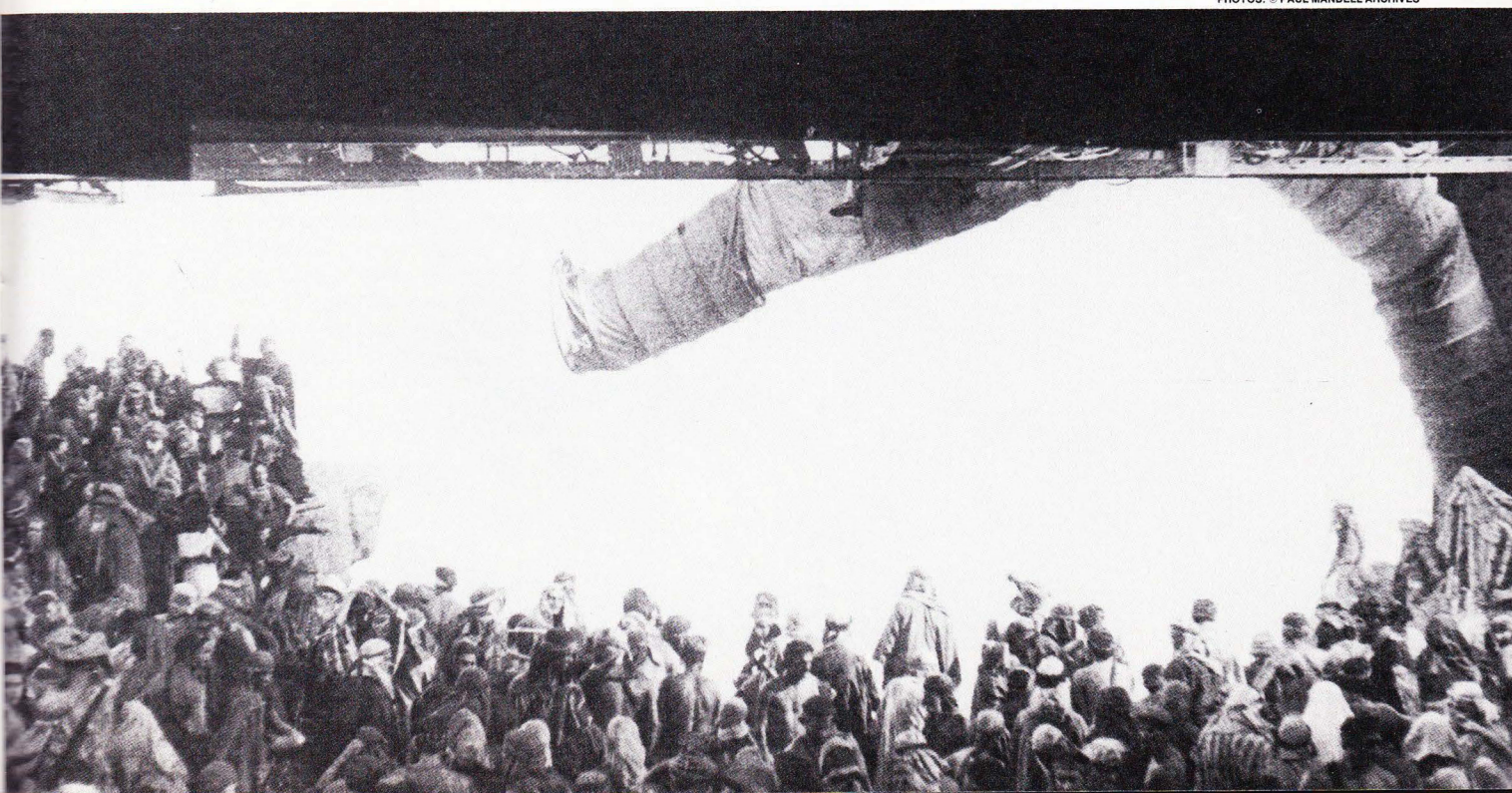
Bluescreen staging was a boring affair for the players, particularly Charlton Heston who had no reference image to guide him. "DeMille would explain it as we went along," Heston revealed. "For the parting of the sea, we had some discussion as to where and how fast I should

point. That was synchronized to the effects months later. Bluescreen shots are not very interesting in themselves, and they're very hard to act in. At the time, we were working under very bright lights and the heat was quite unbearable. Fortunately, film stocks are much faster now."

Miniature skies in *The Ten Commandments* practically defy description. Audiences are forever swept away by them and they look very real. Unlike the technique of injecting poster paint into a glass tank containing a salt water inversion

A view of the bluescreen stage at Paramount. The wind tunnel hanging from the rafters was garbage-matted out. The people beyond the parameters of the screen were put in with a hand-animated traveling matte.

PHOTOS: © PAUL MANDELL ARCHIVES





The camera unit on the platform at right films the action in Egypt. This view is on the opposite shore of the Red Sea. The liberated Hebrews are scrambling to shore under Moses' guidance seen standing on the location rock. Sketch lines at left and right suggest where the walls of water and painted rocks will be inserted.

PHOTOS: © PAUL MANDELL ARCHIVES



This intermediate composite reveals the black holdout areas for the rock matte paintings. A soft-edged matte across the sky was actually black cardboard placed in the matte box during location photography. Britt-smoke clouds were double-exposed in later.



The final composite with Heston as Moses urging his people across is seen in the distant background. The Britt smoke miniature skies are double-exposed into the holdout area. Walls of water are blended into the location plate with matte paintings of rocks.

layer, clouds were formed on a stage with white Britt smoke against a translucent sky backing. Dramatic colors were added with gelled lights and optical tints.

Britt smoke is amazing stuff. Unlike smoke pots, the formations depend on the reaction between an acid and a base, producing a dense, white smoke with a specific gravity compatible with moisture-laden air. The smoke-producing materials are dispersed with a double-head, two-nozzle spray gun. This special head allows spraying the acid or base material either separately or simultaneously. It's astonishing to watch an operator, after having blanketed an area with a mist of one material, proceed to spray dense white clouds with the other solution and have the clouds just *sit* there in mid-air. It was imperative to keep the stage free of stray drafts, as the slightest movement of air causes Britt smoke to become violently displaced. Taking advantage of this, dynamic cloud movements were generated by gently directing air currents into the set and filming them in high-speed.

None of this was easy. To keep the action of the clouds in an advancing continuity, a separate setup of clouds had to be made for almost every scene in the Exodus and Red Sea sequence. Quite incredible, with a final scene count of 102!

Billowing cloud formations were sneaked into long shots of the approaching chariots in magenta, and (in separate cuts) altered with brown and orange gels as they hovered over the encampment. Here, the clouds were simply burned into the masked-off areas of the original location negatives.

For scenes of Moses on the crag overlooking the cloud collision, smoke moving in from both sides of the miniature stage was lit an apocalyptic green. The stage in this instance had a painted horizon piece attached to the base, permitting the clouds to travel over the cutout as they converged. Getting wisps of clouds to *siphon* into the sea was probably achieved by having low-suction vacuum hoses inhale Britt smoke from below the cutout. Swirling side patterns were created by stagehands "spinning" the smoke with wands.

Eventually this sky vista, shot on September 29, 1955, was split-screened with the scene of churning water. The cloud wisps, now disappearing into a soft matte line along the water, seemed to suck up the sea. With arms outstretched, Heston and the others provided the foreground element on December 31, 1955. Parting the Red Sea is always a neat way to ring in the New Year.

Striking portraits of Moses and three girls against a surging sky were filmed on Farciot Edouart's rear-projection stage, where closeups could be modeled more dramatically than in blue screen. These inserts were functional, for they allowed the editor to cut from one turbulent water

setup to another with no giveaway. Edouart was pleased when Mitchell Camera delivered a \$250,000 triple-background VistaVision projector, courtesy of DeMille, complete with lenses manufactured by Pacific Optical.

Sound effects for the Red Sea sequence were among the trickiest ever devised. DeMille and soundmaster Gene Garvin worked closely to maximize their power. To produce the sound of the distant twister, a 600 gallon tank was built. After opening the valve, the water was drained until it reached 100 gallons, and a microphone was placed near the drain for the suction effect. The track was reversed and synchronized with the same track running forward for the Opening of the Sea. In addition, another tank was built and equipped with air hoses and 300 pounds of dry ice. Air was pumped into approximately 1,200 gallons of water. This air noise plus the sound created by the dry ice was used for the roll-back of the wave, as per DeMille's specifications.

Wind effects were selected gusts from a violent storm track played against each other in forward and reverse with reverberation, for a final sound composed of no less than 42 tracks!

For the Closing of the Sea, the same sound used for the opening was run in a forward mode. Screams of the engulfed Egyptians were recorded in a cave at Bronson Canyon, and a heavy avalanche rock effect was introduced to create the impact of waves smashing on each group of chariots. The thunder rumble signaling the Sea's closing was recorded during one

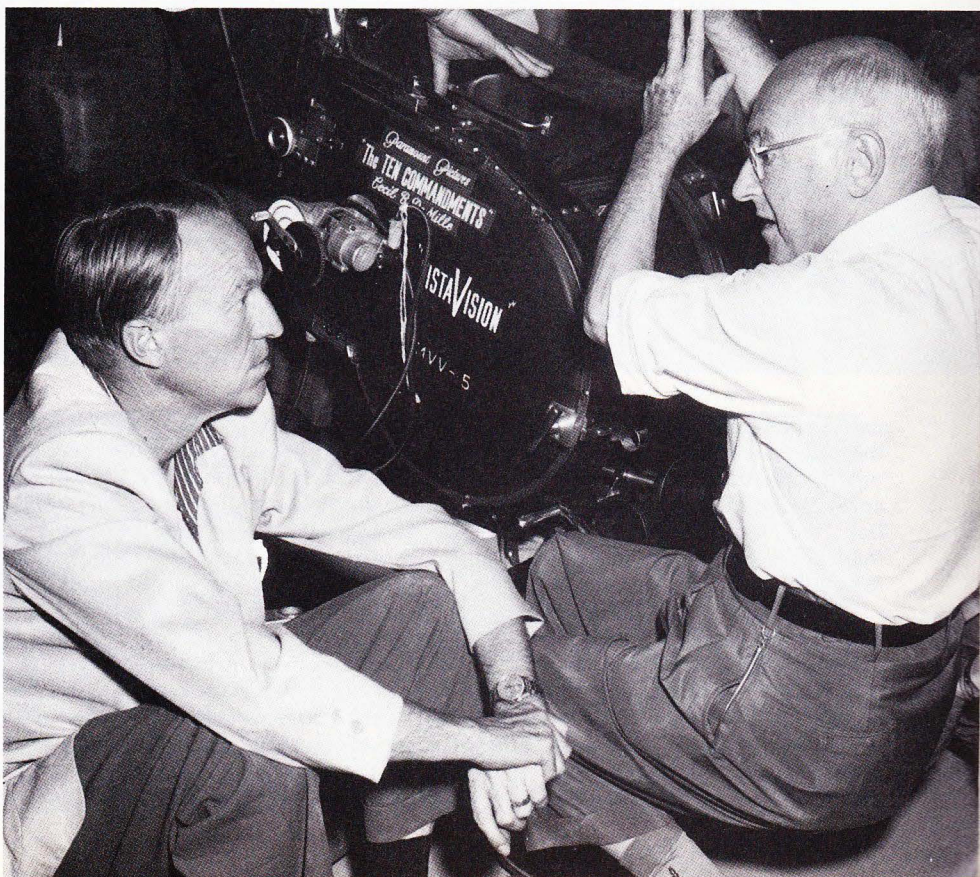
of the early atom bomb tests in Nevada. In all, 35 tracks were used for the final deluge.

Connoisseurs of the film are often stymied by the way the bluescreen stage photography was integrated with desert scenes. Most of it is seamless. For the spectacular vista of Moses surveying the opened sea from the other side, the rock he was standing on actually existed on location, then was recreated entirely as a blue-screen studio set piece to "cover" the desert rock. That coverage was only partial—the base of the *real* rock was retained in the composite, allowing location extras to pass in front of it without being rotoscoped. The blend is so perfect, audiences never realize that actors clinging to the side of the rock are at Paramount, while just below their feet, the procession of people are in Egypt.

As finales go, this one packs a wallop. The wave that closes the Sea features a "curl" capable of knocking any surfer senseless. A background plate of water spilling onto Egyptian turf, filmed from a high elevation, was married to water action splashing up on a studio rock as Yul Brynner clutched his head in woe. The wrap scene of Moses gazing at the heavens—a Poussin-like vista of a blue-screen set, a hushed crowd filmed in Egypt, and miniature storm clouds dispersing—was given an ethereal flourish by having a glass-painted rainbow dissolve onto the plate. The colorization and light phenomena is something out of a storybook.

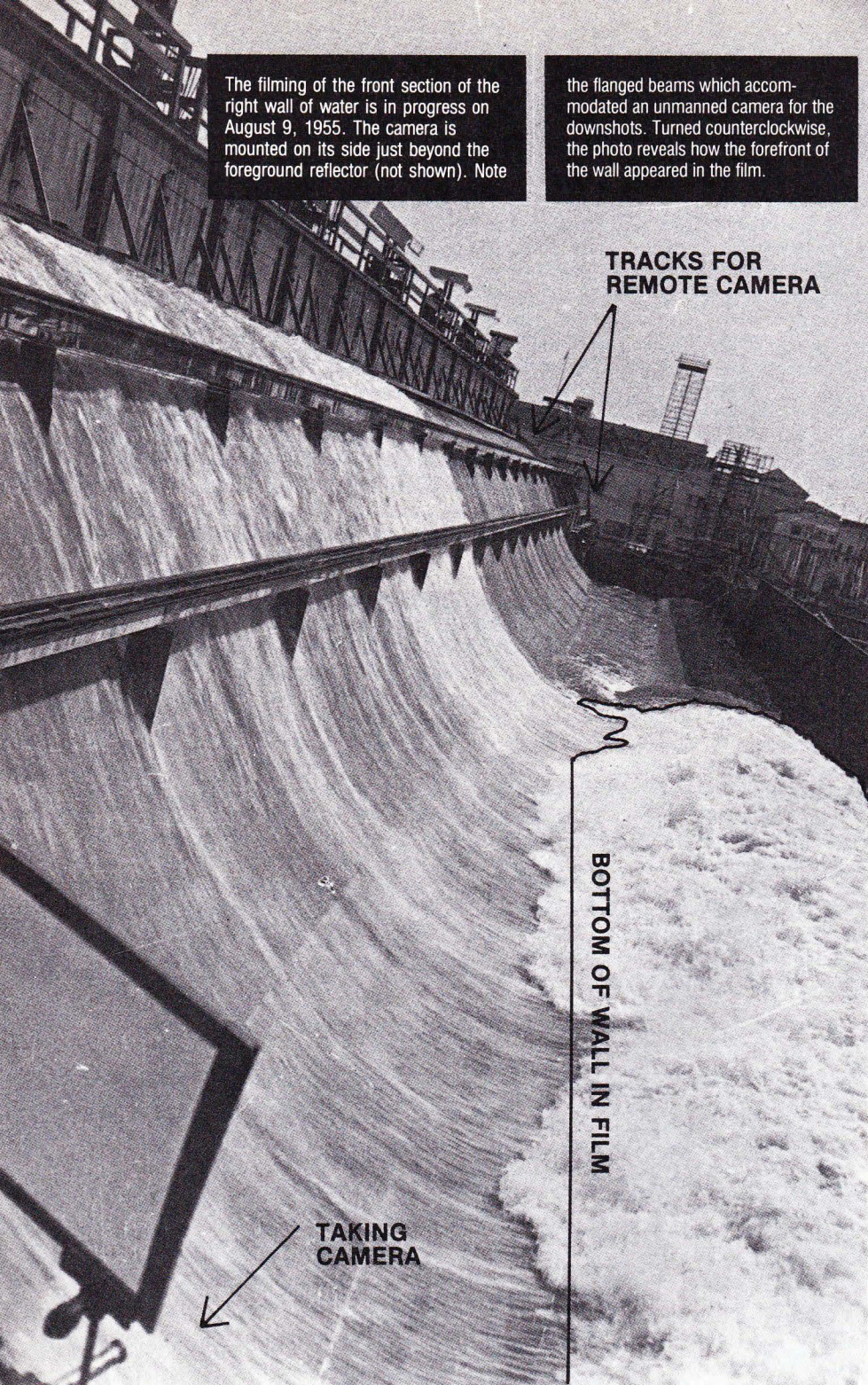
The Ten Commandments made heavier

Cecil B. DeMille lines up a shot during the summer of 1956 for *The Ten Commandments* with effects supervisor John Fulton at left.



The filming of the front section of the right wall of water is in progress on August 9, 1955. The camera is mounted on its side just beyond the foreground reflector (not shown). Note

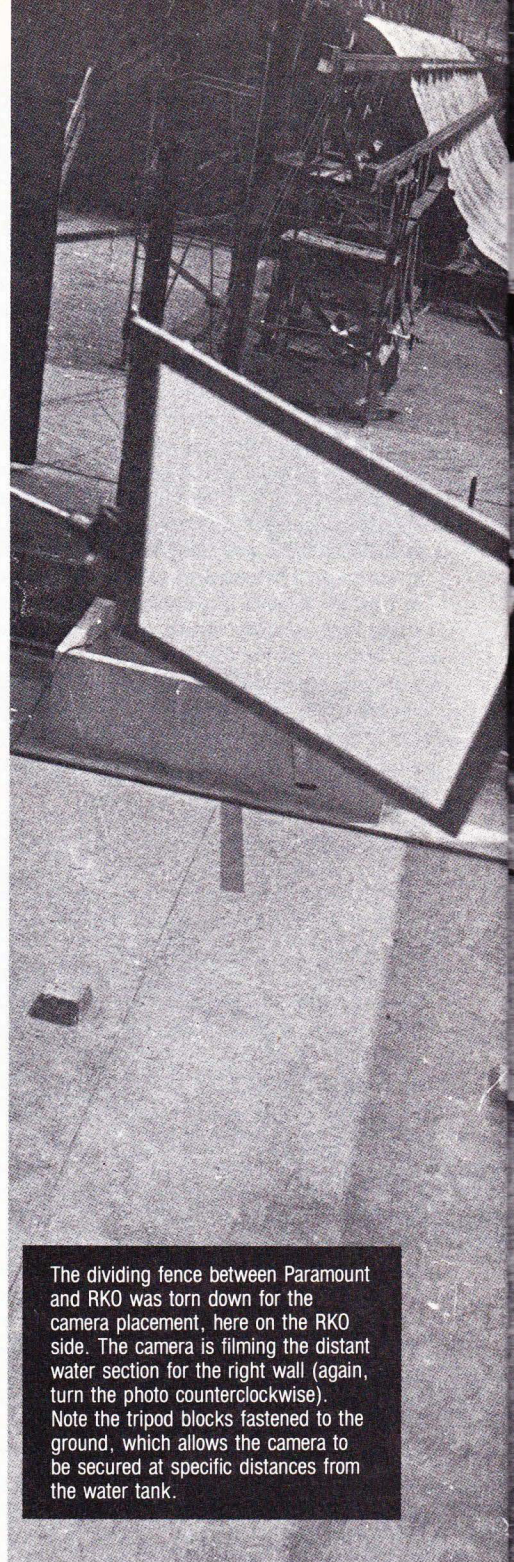
the flanged beams which accommodated an unmanned camera for the downshots. Turned counterclockwise, the photo reveals how the forefront of the wall appeared in the film.



TRACKS FOR
REMOTE CAMERA

BOTTOM OF WALL IN FILM

TAKING
CAMERA



The dividing fence between Paramount and RKO was torn down for the camera placement, here on the RKO side. The camera is filming the distant water section for the right wall (again, turn the photo counterclockwise). Note the tripod blocks fastened to the ground, which allows the camera to be secured at specific distances from the water tank.

use of bluescreen than any other film of the fifties. John Fulton was gung ho on the process and used it for scenes that would conventionally be done with rear projection. DeMille demanded dolly shots (as in Moses' desert banishment) which made for some unusual bluescreen composites.

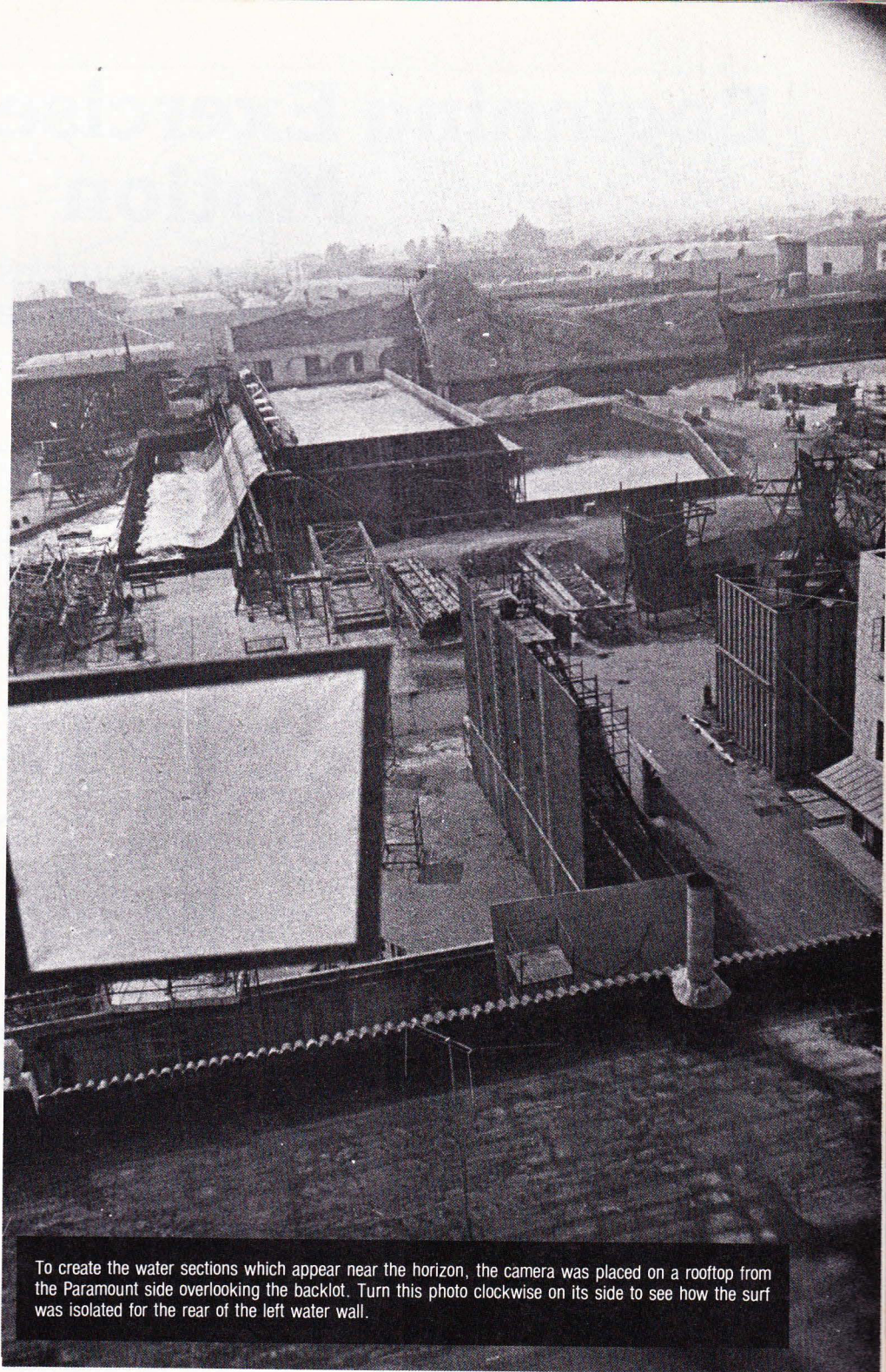
Unfortunately, much of this provides a field day for lovers of matte lines. Technicolor compounded the problem by specifying a matte density that was too heavy for this kind of work. The usual hex of film shrinkage prevailed, despite the installment of a new \$75,000 air-conditioning plant used exclusively to maintain

opticals at constant temperature.

DeMille was viewing the scenes as they were processed. Unhappily, the pressure to complete the film was building in August 1956, as he had theaters under lease to premiere it in November. Feeling the crunch, DeMille OK'ed composites that should have gone through the printer a few more times but didn't. He had to get it out, and the time constraint precluded any further manipulation.

The picture won the Oscar for visual effects in competition with *Forbidden Planet*, and the parting of the Red Sea became a hallmark of epic illusionistic filmmaking,

a view not shared by its detractors who remain staunchly unsentimental. *New York Times* critic Bosley Crowther called it "an obvious piece of camera trickery," and historian Christopher Finch recently wrote of it as "something rather ponderous, even comical." It would be unfair to overlook certain visual bugaboos—the desert middleground is unmistakably dry (something DeMille puddled up in the silent version) and there is no impression of water overlap on the rocks. None of these discrepancies would figure into the sequence if an outfit like ILM ever attempted to outdo this effort, but it's



To create the water sections which appear near the horizon, the camera was placed on a rooftop from the Paramount side overlooking the backlot. Turn this photo clockwise on its side to see how the surf was isolated for the rear of the left water wall.

doubtful if the scope of the illusion could ever be topped.

The Ten Commandments was DeMille's legacy to an industry he nurtured, and its visual scheme lives on. The story of Moses was one he took personally. His style may have been heavy-handed, but you could never accuse him of being *boring*.

"The business of motion pictures is not to preach sermons," DeMille once remarked. "It is our business to tell stories." God knows he never let you forget it. Not for a minute.

(continued on page 62)

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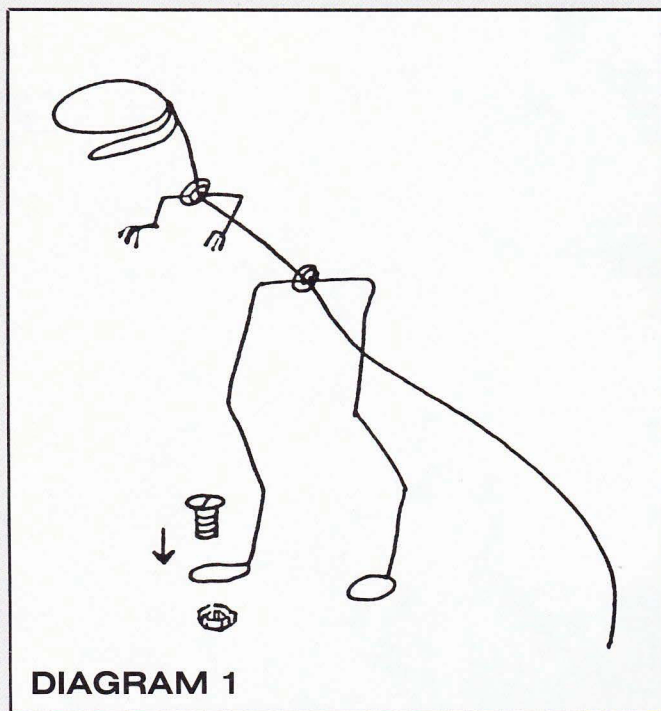
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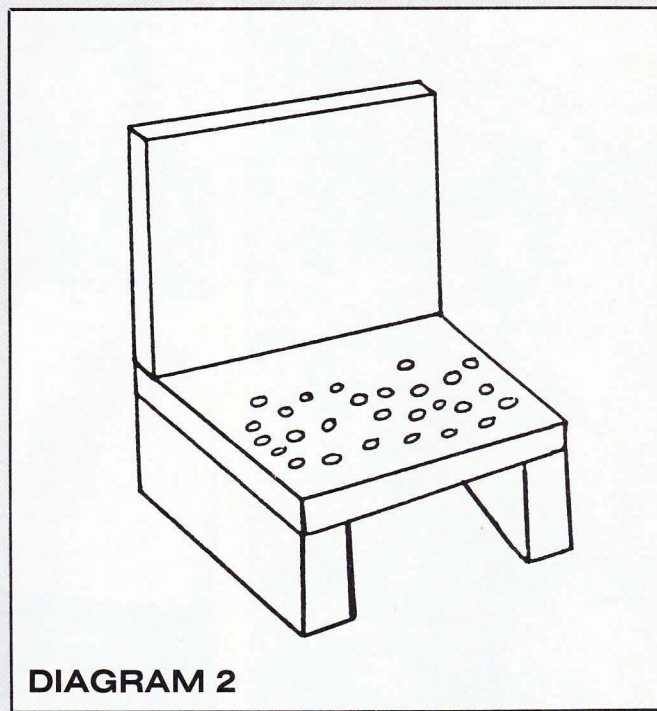
Beginning Exercises in Stop Motion

Flex your animation muscles with these seven easy exercises.

By DOUGLAS BORTON



Construct a simple wire armature for your dinosaur, and make "tie-downs" out of wire loops.



The animation set-up consists of a wooden board drilled with holes used to tie down the creature. The board is mounted on blocks, with a white backdrop.

The toughest thing about model animation can be getting started.

It's possible to become so wrapped up in armatures, foam casting and rear projection that you never really get around to animating. And when you finally do, you may feel lost. What part of the model you move first? Where do you begin?

To answer questions like these, I have designed seven "beginning exercises" utilizing an allosaurus figure. These exercises helped me to understand animation better, and they can help you, too.

Your first step is making the allosaurus. You need a simple model that can be constructed in no time, to allow you to get on with your work. I recommend using a wire armature—either 16-gauge wire from a hardware store or armature wire from an arts and crafts store. Use fine wire, such as that sold for hanging pictures, to help tie the armature together. Bend the heavier wire of the feet into loops through which bolts can be inserted to anchor the model to the stage. These loops are called "tie-downs." (See diagram 1.)

Since these exercises are only for learn-

ing, there is actually no need to "build up" the form of the dinosaur at all. You can just animate the armature. If you do choose to see the monster in the flesh, shape cotton, paper towels, tissue and liquid latex over the armature and texture the last layer of latex as it dries.

Next, make two surface gauges out of the heavy wire. The surface gauge, along with many other concepts you'll need to do these experiments, was discussed in my earlier article "Model Behavior" (CINEMAGIC #24), which is really a "companion piece" to this one. I would recommend reading it, especially if surface gauges, holds, graduation of movement and overlapping actions are new to you. (Also, see "Gauging the Action" in CINEMAGIC #30.)

Now get a large, flat wooden board. Drill holes in it that correspond to the size of the bolts you will be using to tie down the armature. Make enough holes so that the model's foot can be secured at any point on the board.

Mount the board on wooden blocks to allow easy access underneath. (See

diagram 2.) Each time the model takes a step, you will have to tie down the foot that has advanced by slipping a bolt through the wire loop and the drilled hole, then tightly screwing the nut onto the bolt from below. Once this is done, the bolt securing the model's other foot can be removed to allow this foot to advance.

Finally, you might want to mount a white board or a sheet of white cardboard behind the model. This will make it easier to "read" the model's movements in the finished footage.

Light the set-up in the simplest way, with a single movie light angled to one side. Avoid shadows on the backdrop. At this point you are ready to start shooting.

Model Exercises

Exercise 1: Lunge and Recoil.

These exercises start simple and get progressively harder. Don't try to do more than one a day, and don't skip the simple ones just to try your hand at the more difficult shots. Be patient; and if any given shot doesn't work out, do it over.

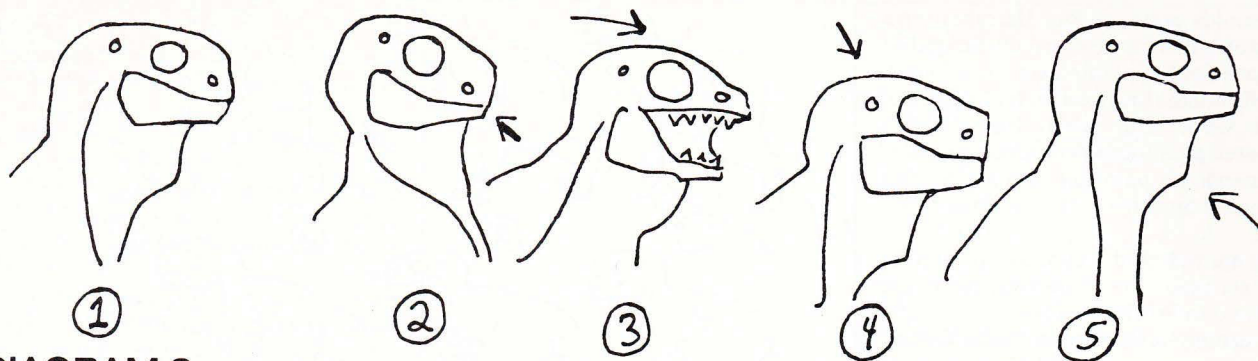


DIAGRAM 3

Lunge and Recoil. Hold on position 1 for 20 frames. Allow 10 frames for the movement from position 1 to position 2, and eight frames from position 2 to position 4. Allow 15 frames for the movement from position 4 to position 5, and hold on position 5 for 20 frames.

In this first exercise, the allosaurus will lunge at some unseen prey and spring back. This particular movement was also discussed in "Model Behavior."

First, bolt both of the allosaur's feet in place. Then follow diagram 3. For this shot, only one surface gauge is necessary; use it to track the movement of the creature's head. If you are using the naked wire skeleton, you might want to put a bit of masking tape or a dab of paint on the wire "skull" to give the gauge something to point at.

The caption of the diagram indicates the number of frames required for each phase of the movement. These numbers are estimates and should be used only as a rough guide. Keep a record of how many frames you have exposed, not only for the whole shot, but also for each phase of action. Be sure to gradually ease in and out of each action and to overlap actions where possible.

Exercise 2: Simple Walk Cycle.

The first exercise was really a warm-up. Now we are ready to try something more

interesting.

Cycles are a basic phenomenon of movement. When a bird flaps its wings or a horse gallops, the motion is cyclical, with the same brief sequence of actions repeated over and over. The motion of walking is also cyclical; you advance one foot, then the other (this is one cycle), and then advance the first foot again, followed by the second (this is a second cycle), and so forth. Furthermore, the movement of your right foot advancing is a mirror image of your left foot's movement as it advances. This means that once you understand how to make your creature take just *one step*, you can make it walk forever—since every subsequent step will be either an exact repeat or a mirror image of the first one.

Diagram 4 illustrates one half (or one step) of my allosaur's 24-frame walk cycle. No one knows how an allosaurus really walked, and there are countless ways of doing it; but I'd advise you to stick to my drawings at first, and experiment with your own variations later.

For this exercise, take the allosaurus

through at least six steps (or three cycles). That's 72 frames. For the moment, don't worry too much about the other parts of the model, such as its head and tail. Keep the creature looking straight ahead, with its tail either dragging behind it or trailing stiffly in the air.

You should use two surface gauges for this shot, one pointing at the head and the other pointing at a leg or at the tip of the tail. Avoid having the model lurch awkwardly from side to side during each step; the gauges will help you keep it balanced and steady.

Exercise 3: Simple Run Cycle. A

run cycle is similar to the walk cycle, but faster. Diagram 5 illustrates my allosaur's 14-frame run cycle. By comparing the run and walk cycles, you will see that the run is simple a walk with some of the positions (such as positions 6 and 8 of the walk cycle) removed. This speeds up the action.

Other creatures have more complex run cycles. When a human being runs or a horse gallops, there is at least one frame where no foot (or hoof) is touching

The basic walk cycle. Each position represents a single frame, for a total of 12 frames for each step the animal takes. The thirteenth frame would be a mirror image of position 1, with the right foot forward and the left foot preparing to advance. The cycle can be repeated endlessly.

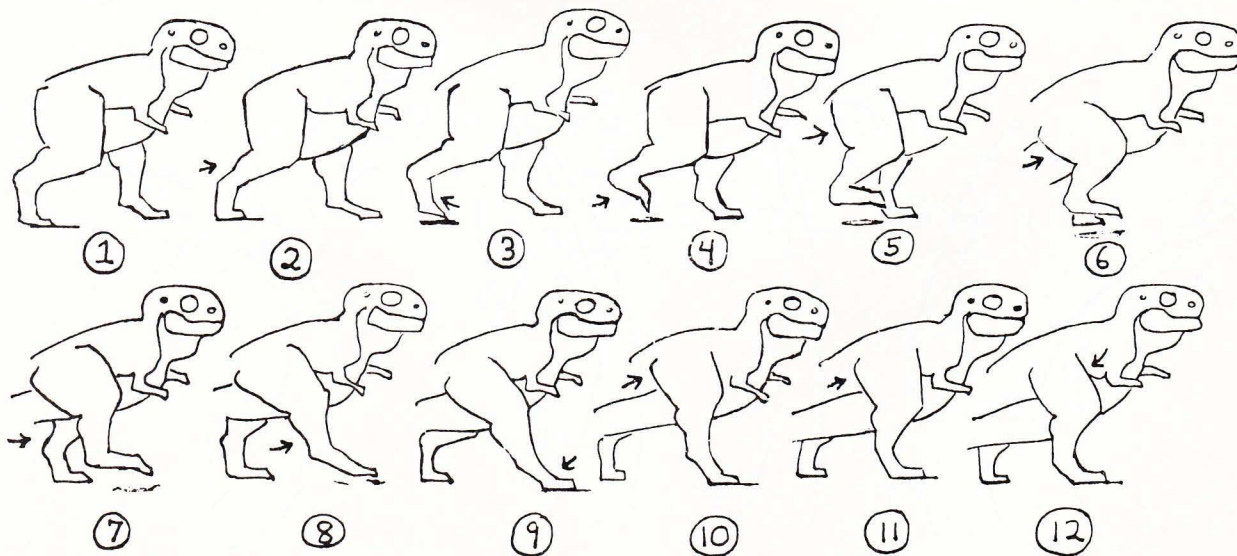


DIAGRAM 4

the ground. In the case of animated humanoids such as Ray Harryhausen's skeletons, this frame is usually fudged so that one foot is planted on the ground; this eliminates the need for tedious aerial brace work. But when Harryhausen animated a galloping eohippus in *Valley of Gwangi*, he painstakingly suspended the model on wires for key frames of the cycle.

Try animating the allosaur through at least six steps or 42 frames. Keep the head and tail stiff as before.

Exercise 4: Complex Walk Cycle.

At this point you should have a pretty good feel for the walk and run cycles, so it's time to complicate the action by adding a new cycle—that of the creature's tail as it swishes back and forth.

Diagram 6 illustrates a basic tail movement as seen from directly above the model. For the sake of simplicity, this cycle has been designed to last 12 frames: the same length as each step of the walk cycle. The two cycles do not really have to be "in sync," but if they are, it will make the animation less confusing.

For exercise 4, take the creature

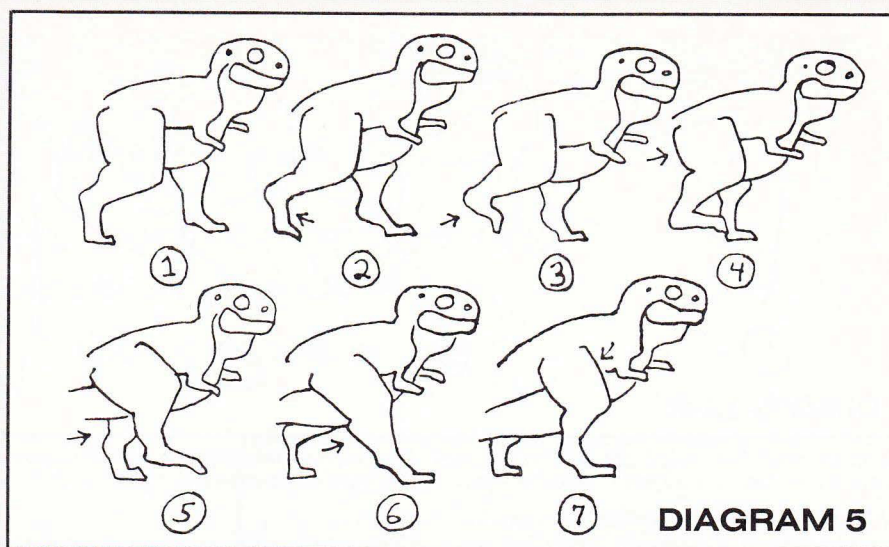


DIAGRAM 5

The basic run cycle. Each position represents a single frame. The eighth frame would be a mirror image of position 1. The model can run forever by repeating the cycle endlessly.

through at least six steps (72 frames) with its tail in constant motion. If you wish, you might also have it turn or raise its head—an action which, by the way, is *not* cyclical.

Exercise 5: Complex Run Cycle.

Here we do the same thing as in the previous exercises, but with all the action speeded up. Diagram 7 illustrates an accelerated tail movement appropriate to

The 12-frame cyclical movement of the creature's swishing tail, as seen from directly above the model. Each position represents a single frame. The 12 drawings show the entire cycle. The thirteenth frame would be position 1, repeated, to start a new cycle.

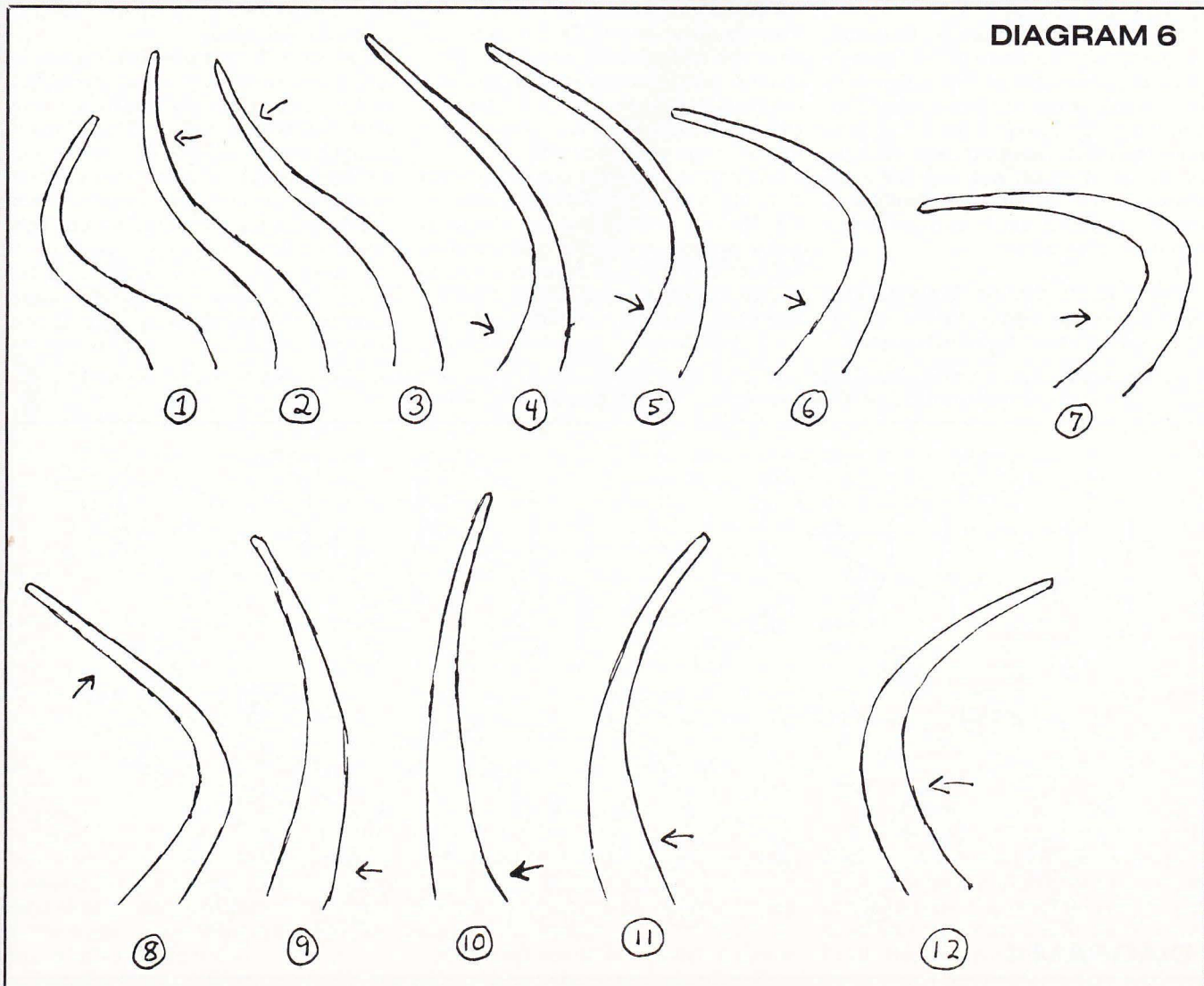


DIAGRAM 6

the more dynamic activity of a running animal.

Take the allosaurus through at least six steps (42 frames) with rapid tail movement.

Exercise 6: Complex Walk, Lunge, and Run. This exercise ties it all together. The allosaur walks for two steps (24 frames); it lunges for its prey and recoils (33 frames, with the holds omitted); then it runs for at least two steps (14 frames). Throughout all the action the animal's tail continues to swish, first slowly (12-frame cycle), and then, following the lunge, more rapidly (the seven-frame cycle).

This is a complex action, but you have built up to it over the five preceding exercises, and you should be ready.

Exercise 7: Run and Turn. Finally, a "capper." The variety of actions possible to an animated beast is virtually inexhaustible; this last exercise is meant only to suggest one of the more dramatic ones: the 180-degree turn.

First, take the allosaur through four steps of the run cycle (28 frames). The tail should not swish. Instead it should be held stiffly off the ground, as illustrated in diagram 8. This way it can better follow the curve of the action.

Now for the turn itself. It's really quite simple. Just execute a standard seven-frame step of the run cycle—but for each frame, swivel the model around on its tie-down bolt just a little bit more. Meanwhile let the tail curl, as shown. When the creature finishes the step, it should be facing in the opposite direction. Then

Run and Turn. The allosaur runs (position 1), then swivels on its tied-down foot while taking a seven-frame step (position 2), then continues running (position 3). The tail follows the curve of the action, curling with the turn and straightening out afterward.

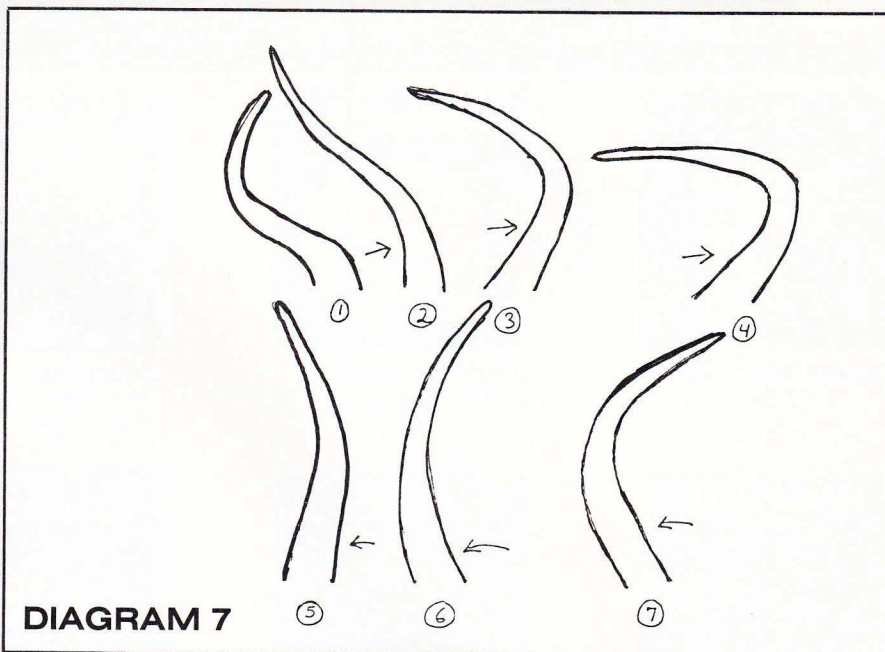


Diagram 7 The seven-frame cyclical action of the tail movement, suitable for the run cycle.

just continue with the run cycle and let the tail straighten out as you go. Animate the model through at least three more steps (21 frames).

To make the action more effective, let the head "lead" the body into the turn by turning first. And you might try making the creature snap or roar as it rushes off.

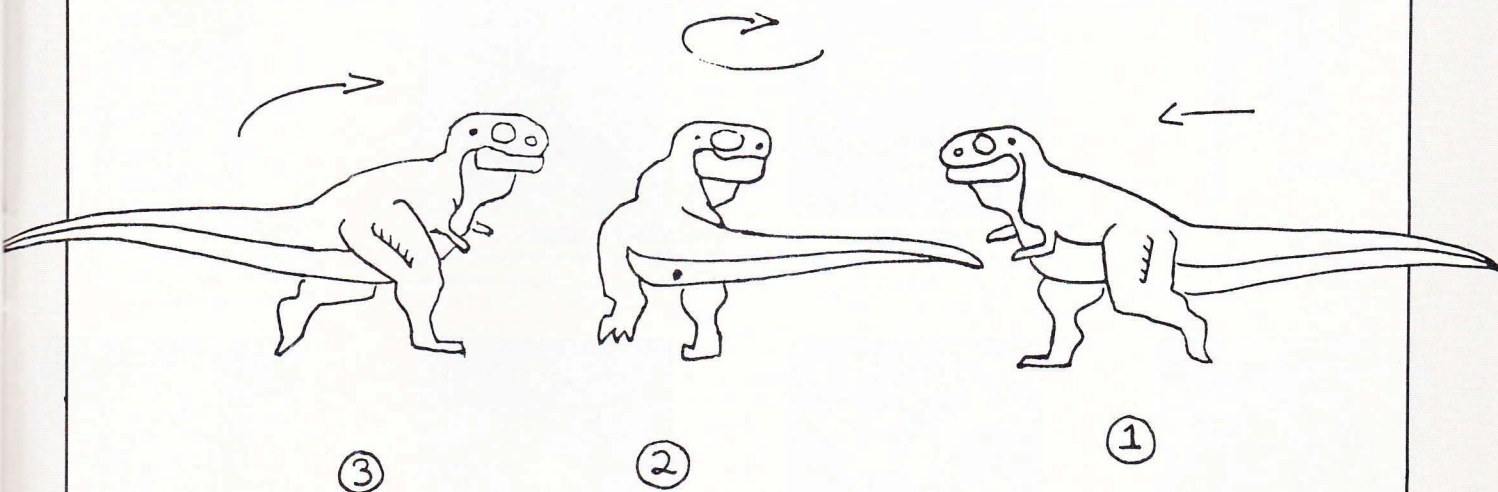
Mastering Movement

As the title of this article indicates, these seven exercises are only a beginning. As you experiment further you will

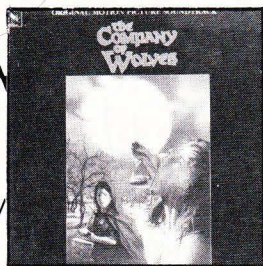
refine your animation and come up with new, more complex and interesting movement. You'll learn to prepare your own diagrams for each action and to improvise a little during the shot. You may even develop your own personal animation style.

Eventually, when you have mastered movements ten times as complex as these, you may look back on your first experiments and smile. But that's okay, even Ray Harryhausen had to start somewhere. CM

Diagram 8

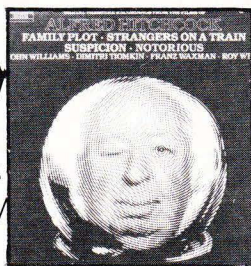


DISCOUNT SOUND



THE COMPANY OF WOLVES

Classic, folk and original melodies by George Fenton mix in this dark, haunting orchestra-with-organ score.



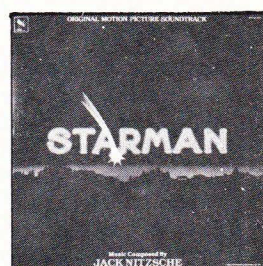
ALFRED HITCHCOCK

New digital recording (Utah Symphony) from "Family Plot" John Williams, "Suspicion" Waxman, "Strangers On A Train" & "Notorious."



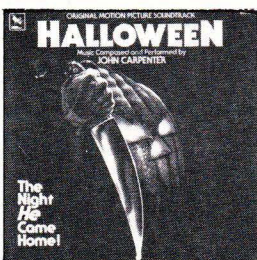
THE AVENGERS

Themes from the series, plus THE NEW AVENGERS and THE PROFESSIONALS.



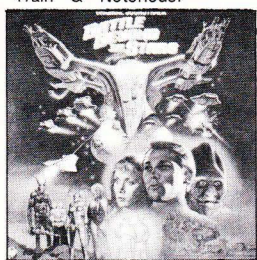
STARMAN

Jack Nitzsche's haunting, romantic score to John Carpenter's exciting alien adventure.



HALLOWEEN

'Chill all year' round to music composed and performed by John Carpenter.



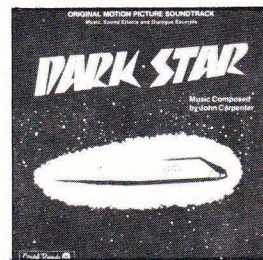
BATTLE BEYOND THE STARS

Exciting orchestral score for humorous SF adventure. RARE!



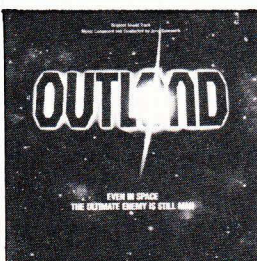
HALLOWEEN II

Music to scream to, by the maker of Halloween.



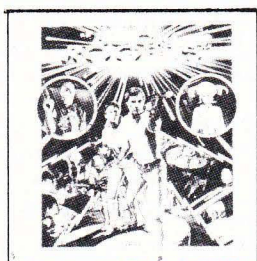
DARK STAR

Cult SF film soundtrack, music and dialogue.



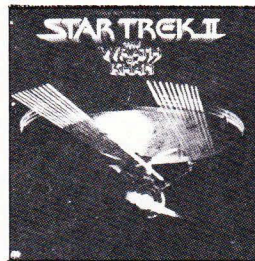
OUTLAND

Jerry Goldsmith's score for the Sean Connery SF film.



BUCK ROGERS

The original motion picture soundtrack, composed and conducted by Stu Phillips.



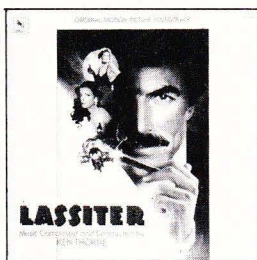
STAR TREK II: WRATH OF KHAN

James Horner's score for the popular film. Digital.



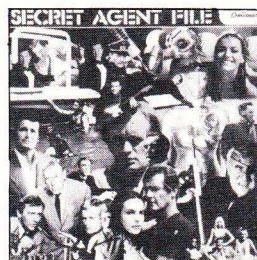
IT'S ALIVE 2

Bernard Herrmann's 50th and last soundtrack score.



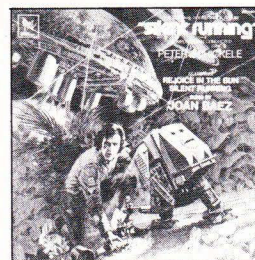
LISSITER

Ken Thorne's driving orchestral soundtrack to Tom Selleck detective caper.



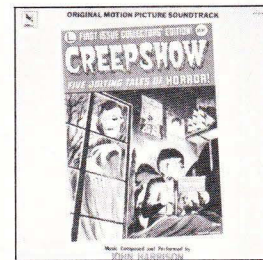
SECRET AGENT FILE

18 cuts in all! Bond films, "Ace of Spies," "U.N.C.L.E.," "I Spy" & others.



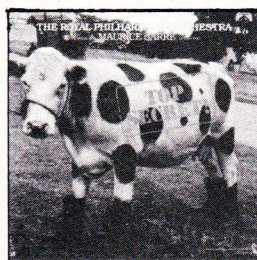
SILENT RUNNING

Music by Peter Schickele; songs by Joan Baez. Newly remastered.



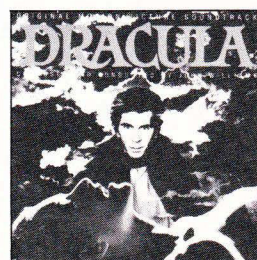
CREEPSHOW

Soundtrack composed by John Harrison. Wild synthesizer music and effects.



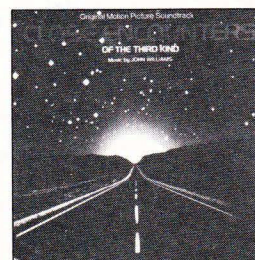
TOP SECRET

Maurice Jarre conducts Royal Philharmonic Orchestra (digital-mix) for this lush, madcap comedy.



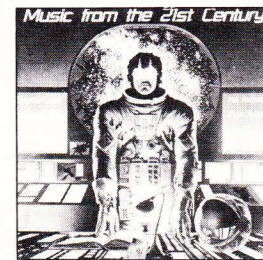
DRACULA

Composed and conducted by John Williams.



CLOSE ENCOUNTERS OF THE THIRD KIND

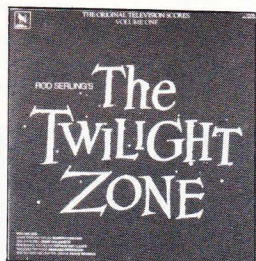
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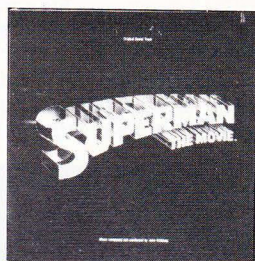
Music by Jerry Goldsmith, Bernard Herrmann, Nathan Van Cleave, Leonard Rosenman and Marius Constant's alternate Main & End Title music.

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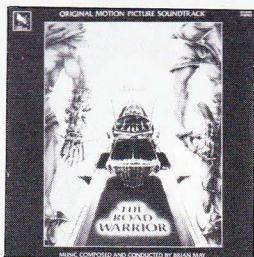
VOLUME V:

Music by Goldsmith, Fred Steiner, Van Cleave and Jeff Alexander—plus alternate titles by Bernard Herrmann.



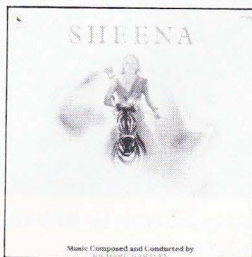
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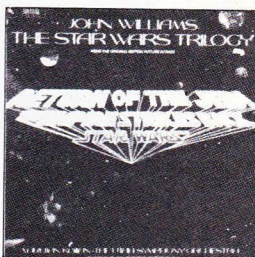
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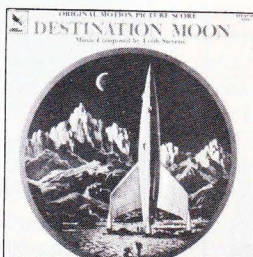
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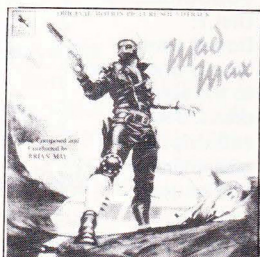
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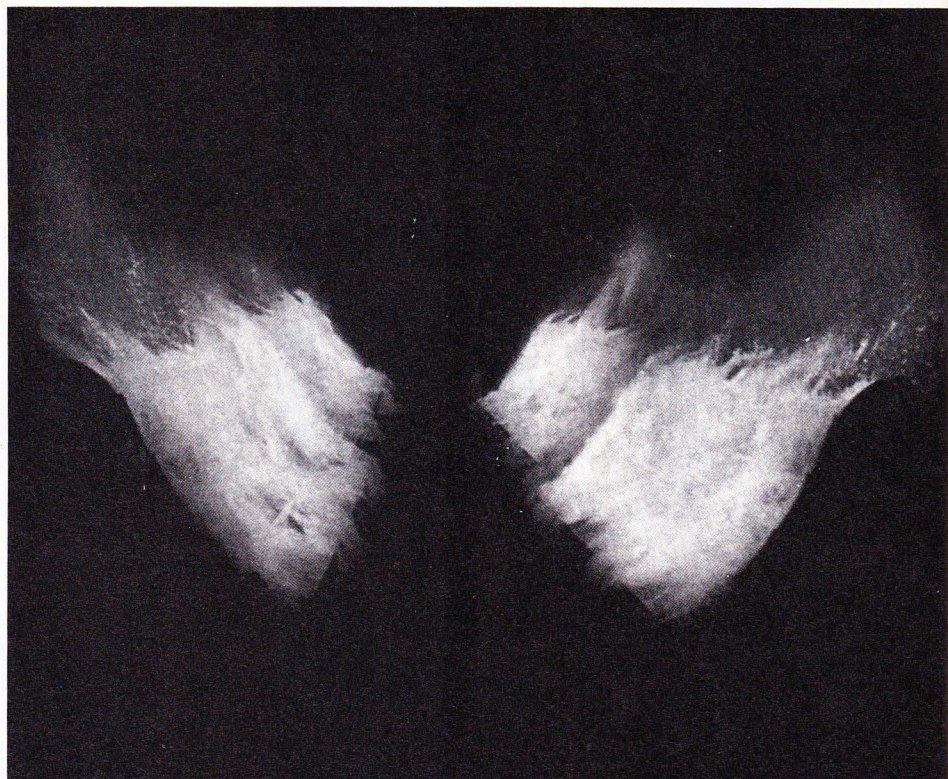
(continued from page 55)

Author's note: This article supersedes the one published in the April '83 American Cinematographer. Acknowledgements: Bernice Fulton, Joanne Fulton Schaefer, Charlton Heston, Paul Lerpae ASC, the late

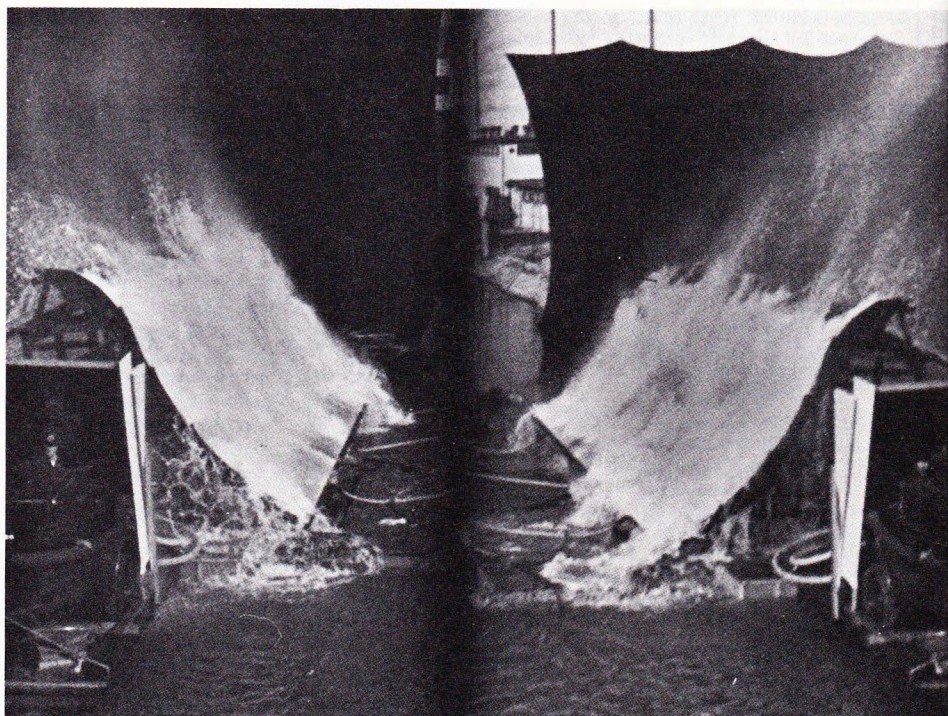
David S. Horsley ASC.

Added thanks to James Martin Poe for special contributions, David Hutchison for his support, Ken Walker for his keen eye.

Next in CINEMAGIC: A close look at other visual effects in The Ten Commandments. **CM**



This early water ramp test was too weak looking for the impact the DeMille and Fulton wanted. The split-screen sections are very obvious in this test.



Early experiments to create the water walls used pressure hoses to shoot water up a small ramp set against a black tarp. The test was flopped and split-screened together. This still, dated December 2, 1953, records what was later called "Fulton's folly." Note the hydraulic pump operator underneath the ramp at left.

Basics of Rear Projection

A Guide to Push-Button Scenery

Rear projection is a low-budget alternative to set construction and location shooting.

The idea of "push-button" scenery may sound too good to be true, yet rear projection exists today much as it has since 1913 as a low-budget alternative to set construction and location shooting. Miniature projection—the projection of small images onto a translucent screen behind animation models or miniatures—is a technique that can work for young filmmakers working in a basement by using an ordinary 35mm slide projector. *Moving* backgrounds usually require the construction of a special projector; a future CINEMAGIC article will detail this process.

Herein are contained the basics of rear projection and a guide to miniature *still* rear-projection. It is a process that you can use in video productions as well as filmed ones—in Super-8 movies as well as 35mm pictures. The results of your efforts can be viewed immediately—seen through the camera viewfinder. Perhaps best of all, the scenery is changed not by erecting a new set, but by simply pushing a button.

Front versus Rear Projection

The principle advantage of front projection is the extreme brightness of the

By JOHN DODS

image (1600 times brighter than a white surface with 3M's Scotchlite reflective sheeting). This is tremendously helpful in the large scale projections of Hollywood productions, but is not so much a factor in *miniature* rear projection where the smaller size of the image automatically makes it rather bright; exposure problems are then solved more easily.

In animation filming, where an intervalometer is often used to control the camera shutter, and long frame-exposures can be conveniently employed, the added brightness of front projection is unnecessary.

Front-projection set-ups are easier to light; it is difficult to wash out the reflected image because of its great brightness. Rear-projected images are easily degraded by stray light striking the screen.

The principle advantage of rear projection is that the process allows for panning, tilting, and tracking of the camera. Camera movement is impossible with a conventional front-projection setup. Also,

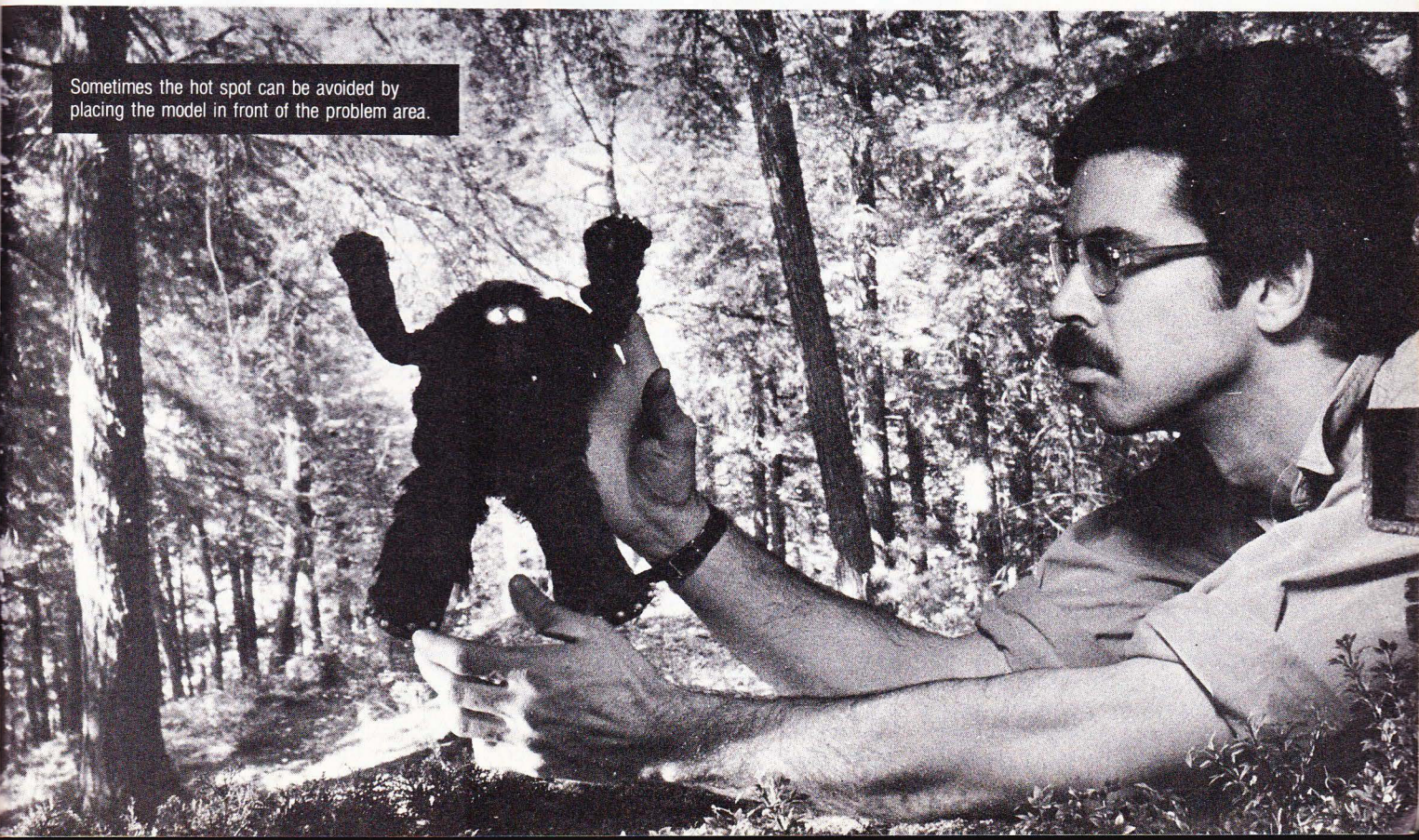
models in front of a rear-projection image can move more freely towards and away from the camera without producing a shadow fringe as can occur with the front projection process. Finally, rear-projection screen materials are cheaper than front-projection materials.

Projectors

Conventional 35mm slide projectors such as the Kodak Carousel series can be used to create sharp, high-quality rear-screen effects shots. Auto-focus projectors will keep the projected image in focus even if the transparency warps from the heat of the lamp, as often happens. Alternately, the transparency can be mounted in glass. This necessitates the use of a "flat-field" lens. Ordinarily, projector lenses are designed to allow for the slight curvature characteristic of cardboard-mounted slides and will not project a glass-mounted slide in focus. Eastman Kodak produces the following flat-field lenses for use in their Carousel projectors: 24mm f/2.8, 65mm f/3.5, 76mm f/3.5, 102mm f/2.8, 178mm f/3.5, and 100—500mm zoom f/3.5.

As with camera lenses, the smaller the

Sometimes the hot spot can be avoided by placing the model in front of the problem area.





A rear-projection set-up from one of author John Dods' "Grog" films. The apples and ground are a foreground miniature. Inset: A behind the scenes look at the same set-up.

f/number, the more light the lens will let through and the brighter the projected image will be. Wide-angle lenses are not suitable for rear projection use because their use causes a severe hot spot. Halogen light sources will last longer and remain at a more constant level of brightness and color temperature than will the cheaper tungsten lamps. This may be critical to stop-motion animators who may require many hours to complete a single shot, during which time a tungsten lamp may provide a fadeout and color shift not in the script.

The color temperature of the projector lamp may not be balanced for use with the motion picture stock being used, although it will probably be close enough for many purposes. You can achieve precise color balancing through the use of a color correction filter in front of the projection lens. The color temperature of the lamp can be determined by phoning the manufacturer; sometimes this information is packaged

together with the lamp.

Some projectors emit a brighter light than others. Bulb wattage is an unreliable guide for predicting picture brightness. Visual comparison or comparative meter readings off a white card can be used to gauge this factor. Bright rear projections facilitate the use of the small camera lens openings that *must* be used to keep the effects setups in sharp focus.

Eliminating Hot Spots

Although such common household materials as white paper and fabric (sometimes used in theatrical productions) can be used as rear screen materials, they diffuse the light so poorly that a severe "hot spot" is formed in the center of such screens. The tendency of the projected image to contain a small circular area or hot spot occurring in the center of the image is inherent in the rear-projection process; light must travel farther to the edges of the screen than to the center.

Translucent plastic materials such as "Lenscreen" (used in the accompanying illustrations) are made for rear-screen use. They reduce the hot spot by diffusing the image fairly evenly across the surface of the screen. Some hot spots, however will remain.

You can position a sheet of glass in front of the slide projector and tape or glue a disc of neutral density material in a position that will correspond to the center of the screen. This will reduce or eliminate the hot spot.

You can place a prop, tree, or model in front of the hot spot to block it from the view of the camera. Sometimes, in the case of an animation model, this happens naturally. Moving the camera and projector farther away from the screen will reduce the "bend-angles" and decrease the hot spot.

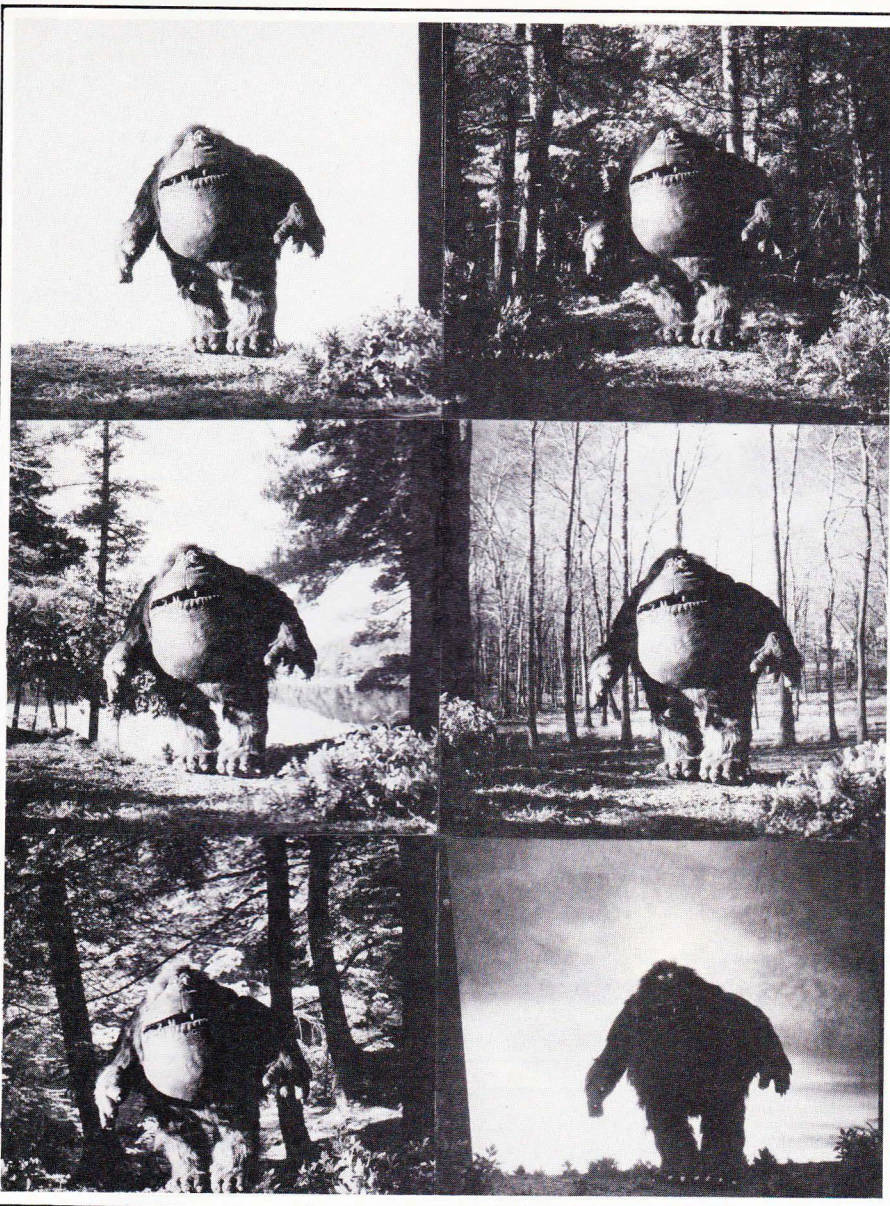
At some point, however, distancing the camera and projector from the screen will necessitate the use of a telephoto lens on the camera; this will cause a depth of field decrease in accordance with the rule: *As magnification increases depth of field decreases*; if you make the image larger either by using a telephoto lens on the camera, or by moving the camera closer to the subject, depth of field will always be reduced.

Some compromise is therefore necessary to reduce the bend angles. A moderate telephoto on both the slide projector and camera lenses is usually a good solution. Wide-angle lenses on either camera or projector will aggravate the hot-spot problem since these lenses will force you to move your equipment *closer* to the rear-projection screen and this is what we are trying to avoid.

"Pick-up angles" don't affect the hot spot, but rather the brightness of the image at the edges of the screen. A pick-up angle is the angle formed by the axis of the lens with the surface of the screen. Ideally, the camera should be pointed more or less directly at the screen. If the camera is pointed up, down, or to either side rather than directly at the screen, the brightness at the screen edges may fall off. A certain amount of panning of the camera across the screen, however, is normally possible.

Aligning the Camera, Projector, and Screen

The axes of both the camera and projector lenses should be more or less pointed at each other, as if there were a straight line going through the centers of both lenses. The screen, as noted above, should be more or less perpendicular to the axes of the camera and projector lenses to avoid a pick-up angle problem. This means, for example, that if the camera setup involves an unusually low camera angle, the projector will have to be raised in order to keep the axes in alignment. Furthermore, the screen will have to be *tilted* in such a case to keep it perpendicular to the camera and projector; it



Changing the scenery can be as easy as changing the slide in the projector. The Grog model is only six inches in front of the rear-projection surface, which keeps both the model and the screen in focus. Note how the direction of the lighting on the model closely matches the lighting in the backgrounds.

might be easier to simply tilt the set or model backwards towards the screen; this would create the same image.

In the book "Hitchcock/Truffaut," Alfred Hitchcock recalled the problems of filming the climactic effects sequence of his 1951 film *Strangers on a Train*, in which a carousel runs amok and explodes: "That was a miniature blown up on a big screen," recalled Hitchcock, "We put live people in front of it. The big difficulty with that scene was that the screen had to be angled differently for each shot. We had to move the projector every time the angle changed because many of the shots of the merry-go-round were low camera setups. We spent a lot of time setting the screen in line with the camera lens." This had to be done to eliminate light fall-off at the screen edges that would have otherwise occurred due to extreme pick-up angles.

The hot spot can sometimes be shifted to a better place on the screen through the deliberate misalignment of camera and

projector. All of the effects of misalignment can be observed visually; the hot spot in the projection can be plainly seen to follow you as you walk back and forth across the projection screen.

Lighting

Stray set light spilling onto the projection screen will wash out the image. This tends to limit the kinds of lighting that can be used to sidelighting and backlighting. This is especially true if the model/set is close to the screen. You should use barn doors, flags or any other manner of light shield to keep stray light off the screen; these should be positioned between the lights and the screen.

The highlights on the model and set must be equal in brightness to those on the rear-projection screen or the illusion won't work. A "spot" type light-meter is a helpful but optional tool that can be used to match highlights.

Long-life, halogen light sources are

preferable to photofloods for animation purposes; photofloods may dim dramatically (and change color) during a long take. Reflectors must be used with caution since they tend to bounce light onto the screen. Small, focused lights are ideal for miniature projection setups because they allow you to put the light exactly where you want it. Slide projectors mounted on tripods make excellent tools for use in lighting miniature setups; they are particularly useful for highlighting very small areas.

Incident readings can not be used on a rear projection screen. You should take a *reflected* light reading by holding the light-meter close to or directly against the rear-projection screen as the background is being projected. If the projected image has an uneven tonality—a "busy" picture with areas of many different tonalities such as the forest backgrounds in the accompanying photos—then many different readings will be indicated from the background.

I try to find an area of neutral tonality that is neither too light nor too dark and use that to gauge my exposure. Ideally, this neutral area should match the tone of an Eastman Kodak "neutral-grey card." These cards can be purchased in or ordered through photo stores for a few dollars. I use the same method for metering the model and set.

A Polaroid or Kodak "instant camera" can be a useful tool in gauging the effect of a rear-projection setup. This type of picture is only a general guide, however, and will not duplicate the exact contrast and color that will be rendered on the motion-picture film stock.

Shooting the Background Transparency

National Geographic magazine, using a team of 12 technicians, recently evaluated 21 film stocks including Kodak, Fuji, and Agfa transparency stocks. Here are some of the results that are pertinent to this discussion:

- The slower the film, the sharper the image.
- Slow films render colors with "greater saturation and more accuracy than high-speed films.
- Kodachrome is the most stable of the films tested.
- Kodachrome ASA 25 provided the sharpest images (Kodachrome 64 is very close to it).
- Fujichrome ASA's 50 and 100 yield lower contrast and higher color saturation than the Kodachromes.

A copy of the 12-page report can be obtained by sending \$1.00 to: Color Film Test Book, Photography Department, *National Geographic* magazine, Washington, D.C. 20036.

Because the rephotography of the background will usually result in a contrast increase, a somewhat lower than normal contrast is desirable in the back-

ground transparency. The Kodachromes are excellent for use in low-contrast situations, such as overcast or misty days, but are too contrasty for many situations having normal lighting. Ektachrome 64 is much lower in contrast than the Kodachromes, thereby making it a good choice for use in high-contrast lighting situations. I'm going to try Fujichrome ASA 50 at my first opportunity. Based on the information in the *National Geographic* report, it sounds like Fuji combines Kodachrome's color saturation with Ektachrome's low contrast. There is no film stock that can reproduce life exactly as we see it; some situations—particularly those having a very high contrast—simply can't be photographed satisfactorily.

Choosing the Lens

You should usually use a normal focal-length camera lens to photograph the background transparency in order to avoid the distortions inherent in the wide-angle and telephoto lenses. Architectural subjects photographed with wide-angle lenses will often be rendered with a great deal of distortion (curvature of the straight lines); this type of distortion, however, would not be nearly so apparent if the subject is a seashore or forest.

Transparencies will begin to fade away after perhaps six to eight hours of projection. It may be necessary to have dupes made of important backgrounds to guard against the loss of key backdrops due to fading. Eastman Kodak makes inexpensive, good quality slide dupes. A more satisfactory procedure is to shoot several identical transparencies in the camera when the background is originally photographed. This will omit the need for slide duplication, a process which may result in increased contrast in the copies.

Raymond Fielding's book "The Technique of Special Effects Cinematography" (Focal Press, 80 Montvale Ave., Stoneham, MA 02180) contains a long technical discussion on the various front and rear-projection processes. This is an excellent general reference book covering the older effects processes. Paul Mandell's "Split-Screen 'Dynamation' Technique" in *CINEMAGIC* #27 details the fundamentals of Ray Harryhausen's in-camera technique for matting models into rear-projected backgrounds. My article, "Filming the White Gazelle" in *CINEMAGIC* #26 includes an illustrated description of Tony Laudati's Dynamation-like method of matting animation models into rear-projected 35mm transparencies.

A Thought To Beginners

When I first attempted rear-projection I had never heard of bend-angles or pick-up angles, and "color temperature" seemed like a vague abstraction. I was ignorant of most of the information in this article, yet my initial results were very good. Rear projection is an easy technique in this way: if something isn't right you can see it, not when the film comes back from the lab, but immediately, right there, in front of you. Don't be put off by the more technical aspects of this article—it's not as hard as it may sound. After all, what other special-effects technique will let you change the scenery and create a new shot simply by pushing a button? **CM**

SUPPLY SOURCES

Edmond Scientific Supply Co., 101 E. Gloucester Pike, Barrington, NJ 08007. (609) 547-3488. Telex 831-564. Cable EDSCORP. Sells "Lenscreen" rear projection material by the yard.

Rosco Lab, 36 Bush Ave. Portchester, NY 10573. (800) 431-2338. Sells a variety of rear-screen materials for about \$14.95 yd. (55" wide).

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Filmmaker Dods positions his model on the miniature set before the rear-projection screen.

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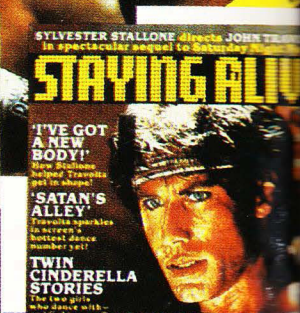
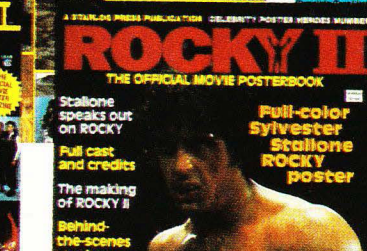
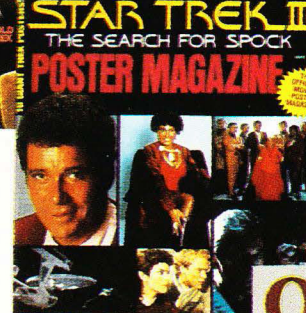
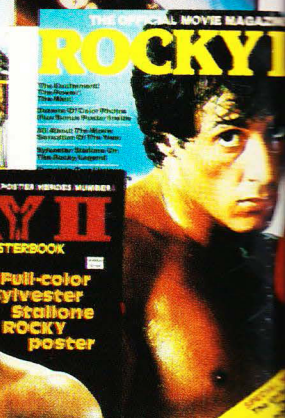
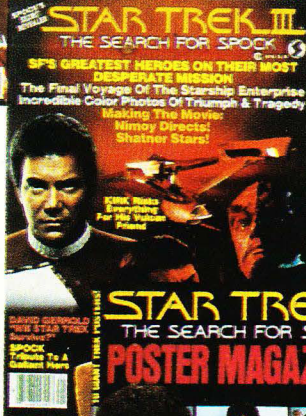
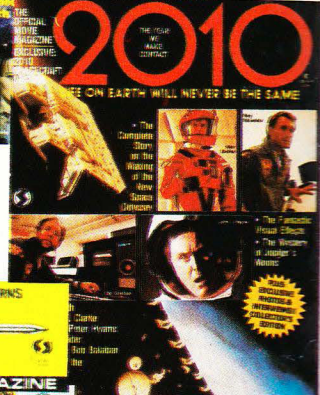
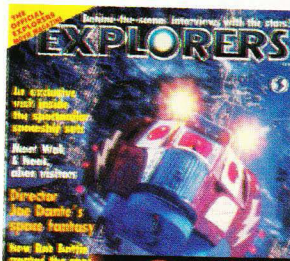
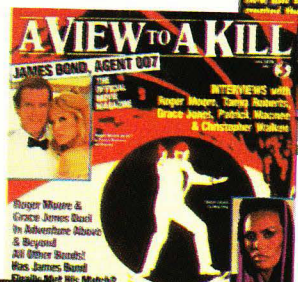
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